INTIMATE PARTNER VIOLENCE AND DEPRESSIVE SYMPTOMS AMONG MARRIED WOMEN OF REPRODUCTIVE AGE IN RURAL BANGLADESH

by
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Abstract

Problem Statement: Intimate partner violence (IPV) is ubiquitous and its prevalence varies between and within countries, ranging between 15 and 71%. In Bangladesh, women experience high levels of physical, sexual, and verbal abuse, with substantial variation by region. IPV has been associated with adverse physical and mental health outcomes for victims. Little research exists concerning IPV in northeast Bangladesh and no studies to date explore IPV typology in the context of Bangladesh. Community specific research on prevalence, risk factors, associations with depressive symptoms, and typology is vital for understanding IPV and future intervention.

Methods: This cross-sectional study uses data from a household survey of married women of reproductive age in the Sylhet District of Bangladesh conducted in 2014 as part of an endline of a quasi-experiment. The original study, known as the Healthy Fertility Study, was a clustered trial designed to measure the effect of a community-based postpartum family planning program on the primary outcome of healthy birth spacing. 4,430 married women were recruited during pregnancy at baseline and 3,966 of these women were available for the endline survey. A revised version of the Conflict Tactics Scale was used to assess exposure to specific acts violence and the Edinburgh Postpartum Depression Scale – Bangladesh Version (EPDS-B) was used to assess depressive symptoms. Factors associated with IPV were determined through use of mixed effects logistic regression. Hierarchical (Ward's Method) and nonhierarchical (K-means) cluster analysis was used to explore IPV typology.

Results: Among women included in the study sample, 28.8% of women had ever experienced physical or sexual IPV by their spouse and 13.2% had experienced a form of

physical or sexual IPV in the past year. The odds of having experienced physical or sexual IPV in the past year were greater among less educated women (AOR = 2.42, 95% CI: 1.86-3.14), for women whose husbands were less educated (AOR = 1.64, 95% CI: 1.23-2.18), and younger women (AOR = 1.50, 95% CI: 1.01-2.25). The prevalence and forms of IPV varied by Union (community). Using a clinical cutoff of 9/10 for the EPDS-B, 30.8% (95% CI: 29.4% - 32.3%) of women were at risk for depressive symptoms. The odds of being at risk for depressive symptoms were more likely (AOR = 2.47, 95% CI: 2.11-2.89) among women exposed to at least one form of abuse in the past year. Physical, sexual and verbal abuses were each independently associated with being at risk for depressive symptoms and those who experienced multiple forms or more severe abuses were most likely to demonstrate depressive symptoms. Cluster analysis results were compatible with Johnson's proposed typology of "situational couple violence" and "intimate terrorism."

Conclusions: In rural northeast Bangladesh, a high number of married women experience IPV. Seldom do victims of IPV share their experiences with others and women almost never pursue formal avenues for assistance. IPV and being at risk for depressive symptoms often go hand in hand. Study findings indicate the need to address all forms of abuse, whether physical, sexual, or verbal. Moreover, there is a great need to address associated mental health burdens among victims. Based on clustering results and typology theory, violent relationships in rural Bangladesh are not all alike and treating them as such in future intervention efforts could be erroneous, even dangerous. Research is needed to better understand the context of IPV and to further validate typology theory in the context of rural Bangladesh.

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I dedicate this work to the many women who have suffered abuse or are currently suffering from violence. I hope and pray for protection, healing, and restoration.

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Acronyms

ANC	Antenatal Care
BNCP	Birth and Newborn Care Preparedness
CHW	Community Health Worker
GBV	Gender Based Violence
IPV	Intimate Partner Violence
IT	Intimate Terrorism
MDG	Millennium Development Goal
MOHFW	Ministry of Health and Family Welfare
MWRA	Married Women of Reproductive Age
NGO	Non-governmental Organization
SCV	Situational Couple Violence

Title: Intimate Partner Violence and Depressive Symptoms Among Married Women of Reproductive Age in Rural Bangladesh

Executive Summary:

This dissertation will explore the prevalence and factors associated with intimate partner violence (IPV), associations of IPV and depressive symptoms, and the validity of "intimate terrorism" and "situational couple violence" IPV typology in the Sylhet District of rural Bangladesh. Data and analysis is cross-sectional, taken from a 2014 endline survey of a community based quasi-experimental clustered trial study, known as the Healthy Fertility Study. In 2007, with funding from the US Agency for International Development (USAID), the Bangladesh Ministry of Health and Family Welfare (MoHFW), the Bangladeshi nongovernmental organization (NGO) Shimantik, the Center for Data Processing and Analysis, MCHIP, and the Johns Hopkins Bloomberg School of Public Health partnered together to develop and test an integrated Family Planning and Maternal and Newborn Health service delivery approach in rural Bangladesh. Impact was evaluated by comparing differences in the trial arms on key outcomes of interest. Embedded in the endline survey for the Healthy Fertility Study were questions regarding IPV, depressive symptoms and relationship characteristics for all participating married women of reproductive age. This dissertation examines the topic of IPV utilizing endline survey data completed in 2014, in addition to sociodemographic data collected at baseline. The Healthy Fertility Study was not an intervention that included components to reduce IPV or depressive symptoms. Analysis confirmed no differences between control and intervention groups and the focus of this dissertation – Intimate Partner

Violence.

The aims of this dissertation are as follows:

1) To determine the prevalence and associated factors of intimate partner violence (IPV) among married women of reproductive age in rural Bangladesh;
2) To examine the relationship of IPV and depressive symptoms among married women of reproductive age in rural Bangladesh; and
3) To explore the validity of "intimate terrorism" and "situational couple violence" IPV typology in rural Bangladesh.

Outline of the Dissertation:

This dissertation is organized into six chapters. The first chapter (Chapter 1) provides relevant background information and a review of literature on intimate partner violence (IPV). The second chapter (Chapter 2) describes the design, method and implementation of the parent study, The Healthy Fertility Study. Methods for the three studies that are the focus of this dissertation are also included in this chapter. The following three chapters (Chapters 3, 4, and 5) detail three studies written to be freestanding journal articles, which serve as the body of this dissertation. Specific research questions, hypotheses, methodologies, results and discussions are provided for each of the three related studies. The last chapter (Chapter 6) presents summary findings, overall conclusions, policy implications, and the strengths and limitations of the studies.

Chapter 1: Introduction

Violence Against Women:

Worldwide, it is estimated that one in three women experiences physical and/or sexual violence at some point in their lives, most of which occurs within an intimate partner relationship (WHO, 2014). Violence by an intimate partner can have devastating effects on a victim's physical and mental health (WHO, 2006; World Report on Violence and health, 2002). In 1993, both the World Conference on Human Rights and the Declaration on the Elimination of Violence against Women demonstrated global consensus that violence against women is a clear human rights violation and that prevention of such violence should be a top priority in public policy. In recent decades, the Millennium Development Goals (MDGs) have stressed gender equality, women's empowerment and improvement of maternal health. The newly established Sustainable Development Goals continue to aim to "achieve gender equality and empower all women and girls." In conjunction, the United Nations General Assembly has declared, "We must ensure zero tolerance of violence against or exploitation of women and girls (1993)"

The World Health Organization's World Report on Violence and Health identifies violence perpetrated by husbands or male partners is "one of the most common forms of violence against women" (Krug, Mercy, Dahlberg, & Zwi, 2002). In approximately half of all female homicides, the perpetrator is an intimate partner or family member (UNODC Global Study on Homicide 2013). Violence by an intimate partner is harder to identify because it most often occurs within the home, can be highly stigmatizing to the family, and frequently occurs in contexts where legal systems and cultural norms often do

not treat any of these actions as a crime (Bass, Annan et al. 2013).

Definitions of Intimate Partner Violence (IPV) and Abuse:

The United Nations Declaration (1993) terms violence against women as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering to women, including threats of such acts, coercion or arbitrary deprivations of liberty, whether occurring in public or private life" (United Nations General Assembly (1993) Declaration on the Elimination of Violence Against Women). Intimate partner violence (IPV), according to World Health Organization, is "any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship." The term "domestic violence" is often used interchangeably, though this term signifies the abuse of anyone in the home, including children and elders (WHO, 2012).

After numerous meetings expressing concern for concrete definitions of IPV for more accurate reporting, a 12-member panel of the Center for Disease Control finalized a list of data elements that were considered essential for IPV surveillance and definitions to be used in conjunction with the data elements to ensure consistency of meaning (Saltzman et al. 1999 p.3). In conclusion, "intimate partners" is to include current spouses, current non-marital partners (dating or boyfriends/girlfriends), former marital partners and former non-marital partners (former dates or boyfriends/girlfriends). Moreover, "violence" is to refer to physical violence, sexual violence, threat of physical or sexual violence, or psychological or emotional abuse "where there has also been prior physical or sexual violence, or prior threat of physical or sexual violence" (Saltzman et al. 1999 p. 11).

Worldwide Prevalence of IPV:

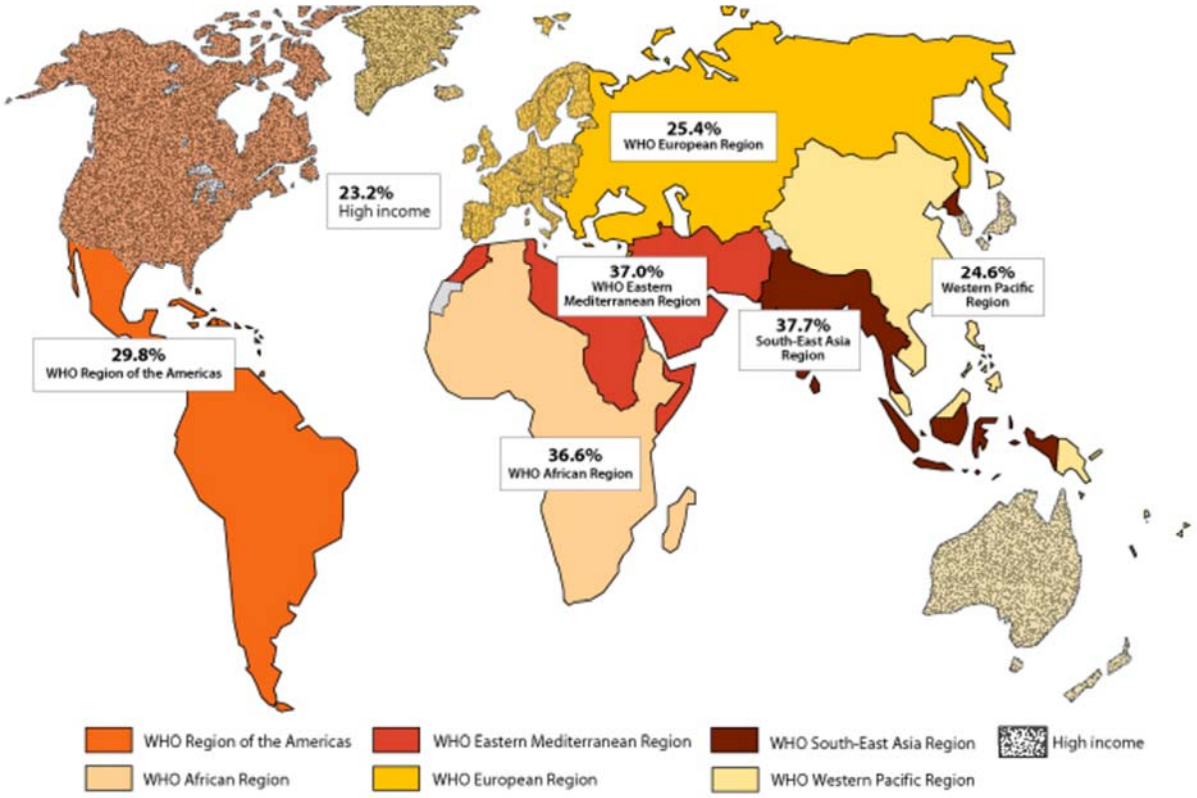
IPV is ubiquitous and its prevalence varies between and within countries, ranging between 15 and 71% (Garcia-Moreno et al., 2006; Krug et al., 2002). While IPV is of great concern globally, it disproportionately affects developing countries (Jayatilleke, Poudel, Yasuoka, Jayatilleke, & Jimba, 2010; Kishor S, 2004). According to the most recent estimates (2013) by the World Health Organization, higher income countries have a lower prevalence of lifetime physical and/or sexual IPV of 23.2%, in comparison to a 30.0% lifetime prevalence globally (Table 1). The low and middle-income regions of Africa, Eastern Mediterranean and South-East Asia were found to have a lifetime prevalence of IPV at about 37% for each. When combining intimate and non-partner violence, the lifetime prevalence of sexual violence in Africa increases to 45.6%, followed closely by Southeast Asia with 40.2% (Garcia-Moreno, 2013).

Table 1: Lifetime prevalence of physical and/or sexual IPV among ever-partnered women

Region	Prevalence, %	95% Confidence Interval, %
Low-and middle-income regions:		
Africa	36.6	32.7 to 40.5
Americas	29.8	25.8 to 33.9
Eastern Mediterranean	37.0	30.9 to 43.1
Europe	25.4	20.9 to 30.0
South-East Asia	37.7	32.8 to 42.6
Western Pacific	24.6	20.1 to 29.0
High income	23.2	20.2 to 26.2
Global	30.0	27.8 to 32.2

(WHO: Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. 2013)

Figure 1:Map of lifetime prevalence of IPV* among ever-partnered women



(IPV: Physical and/or sexual violence; WHO: Global and regional estimates of violence against women: prevalence and health effects of intimate partner violence and non-partner sexual violence. 2013)

IPV in Bangladesh:

Bangladesh has a comparatively high prevalence of IPV, with an estimated half of all women experiencing physical violence in the home (Krug et al., 2002). In Bangladesh, women experience high levels of physical, emotional, and sexual abuse, but rates vary substantially by region (Wahed & Bhuiya, 2007). Population-based survey findings are divergent, estimating the lifetime rate of physical IPV to be between 42% and 76% and annual rate to be about 16% to 67% (Bates, Schuler, Islam, & Islam, 2004; Decker et al., 2008; C. Garcia-Moreno et al., 2006; Schuler, Hashemi, Riley, & Akhter, 1996). Additional studies across varying populations in Bangladesh have found the

lifetime prevalence of IPV among women to be 72% (Bangladesh Institute of Development Studies, 2004), 70% (Rahman, 1999), 67% (Bates, Schuler, and Islam, 2004), 43% (Khan, Rob, and Hossain (2001), 42% (Koenig et. al., 2003), 42% (Bangladesh Institute of Developmental Studies (2004), and 32% (Steele et al., 1998).

There does not appear to be a clear trend when examining differences between IPV prevalence in rural and urban populations. As part of the WHO Multi-Country Study on Women's Health and Domestic Violence Against Women, Naved and Persson (2005) found the lifetime prevalence of IPV to be similar across urban and rural areas, with 40% of urban and 42% of rural women in eastern Bangladesh to have experienced spousal abuse in their lifetime. William et al. (2011), using The Urban Health Survey of 9,122 married women between the ages of 15 and 49, found past-year physical spousal violence to be reported by 35% of women living in slums and by 20% of those not living in slums. In a 2014 study in rural Bangladesh (Mymensingh), 70% of women reported to have experienced physical violence in their lifetime and 18% had physical altercations with their husbands during their pregnancy. Another rural study, what was conducted in 6 Bengali villages in 2013, reported 19% of urban women and 16% of rural women to have been physically abused by their husband in the past year (Yount, Halim, Schuler, & Head, 2013). One urban Bangladesh study (Sambisa et al. 2010) reported 55% of husbands claimed to have abused their wife, with 23% having done so in the previous year; 20% perpetrated sexual IPV; and 60% either physical or sexual IPV ever (Sambisa, Angeles, Lance, Naved, & Thornton, 2011). It has been suggested that IPV varies not in relation to rural or urban context, but by how culturally conservative the area is. Koenig

et al (2003) found that women from more culturally conservative areas had a significantly elevated risk of violence in comparison to women from less conservative areas.

Measuring the true prevalence of IPV among Bengali populations is difficult due to the sensitivity surrounding IPV and whether women are willing to share such events. According to Naved and colleagues, the vast majority (66%) of women in Bangladesh who experienced abuse remained silent about their experience (Naved, Azim, Bhuiya, & Persson, 2006). Reasons for silence included high acceptance of violence, stigma, and fear of greater harm. Sixty percent of urban and 51% of rural abused women never received any help from others and only 2% ever sought help from institutional sources (Naved et al., 2006). Wahed and colleagues (2007) shared similar findings, concluding that a significant number of abused women were silent about experiences of violence for reasons including fear of consequences for both themselves and their children and compromising family honor. This in part, may explain how varying survey methodologies, such as who conducts the interviews and the privacy of the setting, might yield varying results. While studies exploring IPV in Bangladesh have been on the increase, further efforts are needed to both understand and intervene (Bates et al., 2004; Decker et al., 2008; Koenig, Ahmed, Hossain, & Khorshed Alam Mozumder, 2003; Silverman, Decker, Reed, & Raj, 2006).

The Physical Health Burden:

Intimate Partner Violence can have adverse sexual and reproductive health outcomes (Campbell, Lichty, Sturza, & Raja, 2006). Women who have been abused are more likely to have gynecologic disorders and unintended pregnancies (Chen, Jacobs, & Rovi, 2013). Common health issues related to IPV also include asthma, irritable bowel

syndrome, anxiety and sleep disturbances, which can further complicate other physical conditions and at times, produce their own physical manifestations (Chen et al., 2013). Bladder and kidney infections, circulatory conditions, cardiovascular disease, fibromyalgia, chronic pain syndromes, central nervous system disorders, gastrointestinal disorders, joint disease, migraines and headaches often occur after abuses (CDC). Among the most serious injuries include facial fractures, brain trauma, and damage consistent with beatings, often compounded because victims of IPV are less likely to receive any treatment. Researchers have stated that fatality due to partner abuse makes up a considerable proportion of maternal deaths in Bangladesh (Fauveau, Koenig, Chakraborty, & Chowdhury, 1988; Krug EG et al., 2002)

The Mental Health Burden:

The World Health Organization has declared that there is "No health without mental health" (Prince et al., 2007). IPV has been identified as a common contributor to mental health problems including depression, PTSD (post-traumatic stress disorder), generalized anxiety disorder, phobias, dysthymia, and substance abuse (Coker et al., 2002; C. Garcia-Moreno et al., 2006; Karakurt, Smith, & Whiting, 2014; Keshavan, 2015; Krug EG et al., 2002; Mason & O'Rinn, 2014; Naved & Persson, 2008; Roberts, Williams, Lawrence, & Raphael, 1998; Rose et al., 2010; Schnurr & Green, 2004). Moreover, women in abusive relationships are more likely to have suicidal ideations, attempts, and completions (Devries et al., 2013; Krug EG et al., 2002).

Depressive disorder is the leading cause of disability and fourth leading contributor to the global burden of disease worldwide (Ibrahim, Kelly, Adams, & Glazebrook, 2013). In a meta-analysis of intimate partner violence around the globe,

World Health Organization found that women having experienced IPV were twice as likely (OR 1.97, 95% CI: 1.56-2.48) to experience depressive episodes than women who had not (Krug EG et al., 2002). A meta-analysis by Devries and colleagues found there to be a dose-response relationship between abuse and depressive symptoms (Devries et al., 2013). Though the relationship between IPV and depression has mainly been examined in the context of higher income countries, a growing body of evidence has emerged linking IPV and depressive symptoms in lower and middle-income countries (Ali, Mogren, & Krantz, 2013; Chandran, Tharyan, Muliyil, & Abraham, 2002; Deyessa et al., 2009; Dillon, Hussain, Loxton, & Rahman, 2013; Ellsberg et al., 2008; Ishida, Stupp, Melian, Serbanescu, & Goodwin, 2010; Kamimura, Ganta, Myers, & Thomas, 2014; Keshavan, 2015; Kumar, Jeyaseelan, Suresh, & Ahuja, 2005; Ludermir, Lewis, Valongueiro, de Araujo, & Araya, 2010; Mason & O'Rinn, 2014; Peltzer, Pengpid, McFarlane, & Banyini, 2013; Stephenson, Winter, & Hindin, 2013; Tsai, 2013). The few studies examining the relationship between IPV and depressive symptoms in Bangladesh demonstrate a strong relationship, but are focused only on maternal depression during the postpartum period (Gausia, Fisher, Ali, & Oosthuizen, 2009; Kabir, Nasreen, & Edhborg, 2014; Wahed & Bhuiya, 2007). One such study conducted in rural Bangladesh reported that postpartum women experiencing physical IPV were three times more likely to manifest maternal depressive symptoms (Kabir et al., 2014). Similarly, Gausia and colleagues conducted a study in rural Bangladesh (Matlab) and found IPV to be a major risk factor for postnatal depression (RR 2.43, 95%CI: 1.42-4.14) (Gausia et al., 2009).

Research indicates between one and three quarters of physically abused women experience symptoms consistent with PTSD (Post traumatic Stress Disorder) (Cody,

Jones, Woodward, Simmons, & Beck, 2015; Ferrari et al., 2016; Golding, 1999; Mertin & Mohr, 2001). PTSD occurs when exposure to a traumatic stressor, such as violence, is followed by fear and a sense of helplessness (Karakurt et al., 2014). Common PTSD symptoms include flashbacks and nightmares, emotional numbing, heightened anxiety, and avoidance of trauma reminders. While psychological, emotional and physical abuses have been associated with a greater risk for PTSD, it has been found that victims of sexual violence are especially vulnerable to PTSD (Kilpatrick, 2004).

Although the bulk of research concerning IPV and mental health is focused on depression and PTSD, GAD (generalized anxiety disorder), panic disorder, and substance abuse are also common issues for victims (Cody et al., 2015; Gleason, 1993; Mason & O'Rinn, 2014). Results from a meta-analysis of 17 studies examining IPV and psychiatric disorders revealed women who had experienced IPV were more likely to experience GAD (OR 2.4, 95% CI: 1.9-3.0) and panic disorder (OR 1.9, 95% CI: 1.4-2.5) (Oram, Trevillion, Khalifeh, Feder, & Howard, 2014). Additionally, a WHO meta-analysis of international studies reported that female victims of partner violence were approximately twice as likely to suffer from alcohol use disorders (OR 1.82, 95%: 1.04-3.18). After thorough examination of 14 papers exploring the relationship between IPV and substance abuse, Mason and O'Rinn (2014) also reported overwhelming evidence of increased usage of both illicit and nonillicit drug use among battered women (Mason & O'Rinn, 2014).

The Burden on Children:

IPV and related depressive symptoms are not only a burden to mothers, but can also have a negative influence on their children. Violence against mothers is

hypothesized to relate both directly and indirectly to the poor health of young children (Jejeebhoy, 1998). Specific mechanisms include immunosuppression from stress-related trauma from exposure to violence against a parent (Ellsberg, Pena, Herrera, Liljestrand, & Winkvist, 2000; Yoshihama & Sorenson, 1994), direct violence, injury, and mistreatment of children from fathers, and diminished parenting capacity among abused women (Ellsberg et al., 2000; Krug EG et al., 2002). Victims of IPV more frequently experience having children of low birth weight and giving birth prematurely, which can complicate the health of the newborn (WHO Meta-analysis). Depressive symptoms, commonly associated with IPV, have been linked with impeded maternal attachment, in addition to poor social, emotional, psychological and physical development (M. M. Black et al., 2007; Bowlby, 1978; Nasreen, Kabir, Forsell, & Edhborg, 2013). Experiences of trauma and anxiety are more common among children exposed to violence against a parent compared with unexposed children (Ellsberg et al., 2000; Yoshihama & Sorenson, 1994). In Bangladesh, Silverman and colleagues (2009) found that children (under 5) of mothers exposed to IPV in the past year exhibited increased risk for acute respiratory infection (adjusted OR 1.37; 95% CI: 1.03-1.83) and diarrhea (adjusted OR 1.65; 95% CI: 1.15-2.38) (Silverman et al., 2009). Furthermore, children often experience physical injury through direct abuse by their father (Krug EG et al., 2002). Also, sexually transmitted infections have been associated with IPV and can affect the health of a child or sexual partner, in addition to maternal health (CDC).

The Economic Burden:

The economic burden of IPV in Bangladesh is unknown. In the United States in 1995, it was estimated that costs of IPV against women to be $5.8 billion, $4.1 billion of

which was attributed to direct costs of medical and mental health care. Another $1.8 billion was projected to be losses from productivity (CDC, 2003). When estimated for 2003, IPV direct costs of medical and mental health care exceeded $8.3 billion, with $6.2 billion directly attributed to physical assaults, $420 million for rape, $461 million for stalking, and $1.2 billion in the value of lost lives. Moreover, the annual health care costs for IPV victims persist for as much as 15 years after the cessation of the abuse(s) (Rivara et al., 2007)

South Asian Efforts to Protect Women:

Violence against women in South Asian countries remains commonplace in the home, despite efforts at the governmental level. To promote women's equal rights and status, "The Convention on the Elimination of All Forms of Discrimination against Women" (CEDAW) was adopted by the United Nations in 1979 and signed into international treaty in 1981. The CEDAW endorses women's legal, political, and reproductive rights, in addition to protection from domestic violence. All South Asian countries entered into agreement, but some amended provisions that were said to conflict with religious Islamic law. Bangladesh joined in 1984 with such amendments, which are still disputed by many women's rights advocates. A decade later, in 1994, "The Jakarta Declaration for the Advancement of Women in Asia and the Pacific" was drawn up to specify goals, objectives, and actions to be taken by governments and in so doing, sparked efforts in many Asian countries targeting violence against women (Jayatilleke et al., 2010). The following year (1995), Beijing hosted the fourth United Nations World Conference on Women, in which 189 countries (including Bangladesh) signed into agreement on actions to prevent violence against women.

Bangladesh Efforts to Protect Women:

In recent decades, multiple laws protecting women have been passed. The Child Marriage Restraint (Amendment) Ordinance of 1984 changed the age of legal marriage from 16 to 18 in an effort to deter teenage pregnancy and abuse. The Muslim Marriage Act was amended in 1982-1985, which allowed women the right to divorce in the event of abuse and desertion (Bhuiyan, 1985). The Dowry Prohibition Act of 1980 was amended in 1982 to prohibit all forms of practicing the dowry system and violators are now punishable by one to five years of incarceration (Bhuiyan, 1991). The Suppression of Violence against Women and Children Act of 2000 built upon The Cruelty to Women Act of 1980 and provided an outline for punishing perpetrators of violence against women both inside and outside of marriage. However, empowering these laws to bring about justice for women proves difficult, as criminal suits against offenders can be extremely expensive and the women violated seldom have the resources to bring the violators to court (Ali, 2002; Ashrafun, 2013).

Mental Health in Bangladesh:

Though IPV and associated burdens on families in Bangladesh is immense, few resources are available to prevent, mitigate the effects of, and heal from violence. The World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) reported that in 2005, less than 0.5% of heath expenditures by the government went towards mental health. Moreover, 67 % of these were designated for the only mental health hospital in the country in Dhaka, the urban capital. The total number of human resources working in mental health facilities or private practice is about 1 for

every 200,000 people, which is estimated to be even sparser in the rural areas, such as Sylhet.

Understanding IPV (IPV, Relationships & Culture):

Victims of IPV often have deep love for their abusive partners and compartmentalize abusive behaviors as only one aspect of a relationship (Strube, 1988). Other aspects of the relationship might be viewed as beneficial and desired by the victim. An abuser can use these emotional attachments to persuade the victim to stay in the relationship (Rosen, 1996). Furthermore, perpetrators of IPV are often emotionally dependent, insecure, and have low self-esteem, which can lead to violence. Hence, their perpetration of violence shouldn't necessarily be interpreted as hatred or disdain for the victim (Krug EG et al., 2002). Abuse has even been interpreted in some cultures as love. To not receive abuses in some contexts would be a demonstration that a husband does not care. Surveys across a variety of cultures have demonstrated a strong tendency to justify IPV. Surprisingly, IPV is often justified more so by women than by men. In a survey of 17 Sub-Saharan African countries, 29% – 75% of women have reported that wife hitting or beating is justified (Uthman et al. 2010).

In the Bangladesh 2004 DHS, 55% of men ages 15 – 55 said that a husband was justified in beating his wife in at least one of the following scenarios: (1) Goes out without telling him; (2) Neglects the children; (3) Argues with him; (4) Fails to provide food on time (NIPORT, 2005). In the 2007 Bangladesh DHS, 36% of both men and women ages 15 – 49 reported that there were justifications for beatings (NIPORT, 2009). In a more recent survey among rural women in Bangladesh, almost 50% of women of reproductive age justified physical violence, with this rate varying from 4% to 90%.

Structural pressures to adopt such views or to report the perceived socially desirable response may play a factor in such justifications (Yount, Halim, Head, & Schuler, 2012; Yount et al., 2013). Yount et al. (2013) found that few women (1% – 8%) justified wife hitting or beating when her transgression, as perceived by the perpetrator, was depicted as unintended. Conversely, relatively more women (38% – 68%) justified abuse by the husband when the woman's transgression was depicted as willful, especially disobeying elders in the marital family (68%), neglecting the children (65%), and arguing with the husband (59%). In fact, a large majority (79%) of women justified wife hitting or beating for at least one of the five scenarios presented in which a willful transgression had taken place. Almost one third of women justified abuse for all five scenarios in which willful transgression had occurred. Women who reported justification of abuses were less schooled, reported less power in decisions, less often were members of community organizations, and had less exposure to certain forms of media. In line with Kandiyoti's (1988) theory of bargaining with patriarchy, rural women with fewer opportunities and living under classic patriarchy may tend to adhere to its norms.

In a qualitative analysis, Schuler et al. (2012) analyzed gender differences regarding justification of wife beating in rural Bangladesh. Women perceived others in their community to be more likely to condone wife beating than they themselves were. It may be that some women feel uncomfortable disclosing their personal attitudes when they are seemingly in conflict with community norms about IPV. Women frequently seemed pessimistic regarding their power to change their circumstances, and believed their own opinions didn't matter, which may have led them to articulate what they thought was the

reality in their communities (that men can beat women), rather than what they really felt was justified (Schuler, Lenzi, & Yount, 2011; Schuler, Yount, & Lenzi, 2012).

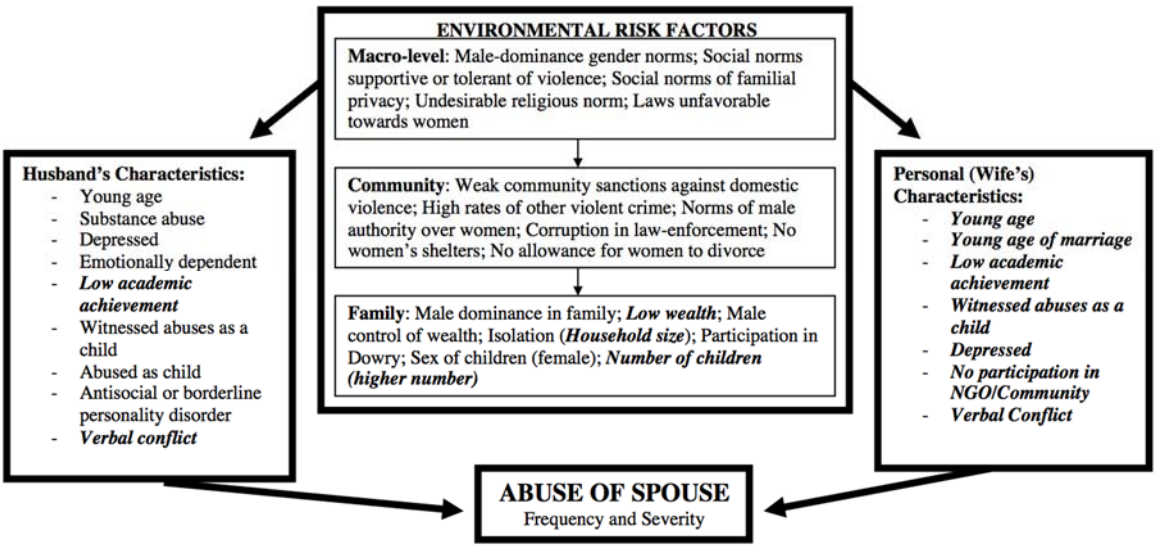
Traditional Paradigms of IPV:

Bell and Naugle (2008) outline six different conceptual frameworks for understanding IPV that have been broadly utilized (Bell & Naugle, 2008). Under feminist theory, abuses are mainly due to sexism and female inequality established by patriarchal societies. Men are placed in positions of power and gender roles are taught from an early age, with men using abuse as a means of control and exertion of dominance over women. Power theory suggests that the use of violence to resolve family conflict is learned from an early age. Power imbalance between partners and stresses increase tensions within the family, which are thereby resolved by abuses. Social learning theory is similar to power theory in that conflict resolution methods are learned as a child through observation, but places further emphasis on a reinforcement paradigm. If the person experienced positive rewards for violence, the behavior will likely be repeated. The background/situational model, otherwise known as the ecological model, illuminates historical, societal, and individual characteristics partnered with the presence of situational factors, such as substance use or relationship satisfaction, as the main determinants of violence. Contemporary gender theory suggests that gender is both a characteristic of individuals and social structures that influences how persons are to relate and interact in relationships (Johnson, 2006; Risman, 2004). Typology models explain violence by emphasizing attachment styles and personality characteristics. Under this framework, early childhood experiences, such as unhealthy attachments with formative figures (parents), are attributed as the root causes of IPV (Bell & Naugle, 2008).

An Ecological Model of IPV (A Conceptual Framework):

The ecological model was first developed in the 1970s to understand child development, but alterations of this model have since been used to explain IPV (Garbarino et al., 1978; Bronfenbrenner, 1979; Chaulk et al., 1998; Ashrafun, 2013). IPV exists within the context of complex interrelationships between the victim, the perpetrator, and their environment (CDC, 2015; Chaulk & King, 1998; Heise, 1998; Krug EG et al., 2002). The adapted model used in this dissertation highlights possible risk factors for IPV, from personal characteristics to broader family, community, and cultural contexts. The tiers of the model include the macro-level, meso-level, and micro-level. The macro-level includes larger societal factors, such as cultural norms. The Meso-level is comprised of interpersonal relationships in the community and family. Finally, the Micro-level includes all of the individual level factors in play, such as biological or psychological traits. Risk factors for violence are presented in the following model with further explanation at each level [Figure 2: Ecological model of IPV (spousal abuse)]. Integrated into the presented ecological framework are principles taken from stress theory, which postulates that both family relations and environmental stressors present opportunities for friction and conflict. While these stressors are not viewed as the reasons for IPV in and of themselves, they do present the opportune setting in which frustrations and conflicts are improperly dealt with through violence (Farrington, 1980, 1986). The following model, adapted from the World Health Organization, will be used to explain IPV in this study (World Report on Violence and Health. Chapter 3. World Health Organization, Geneva 2002; Bell and Naugle, Intimate partner violence theoretical considerations: Moving towards a contextual framework. Clinical Psychology, 2008).

Figure 2: Ecological model of IPV (spousal abuse)



(Note: Italicized factors were available for analysis)

Characteristics of Society

Classic patriarchy remains prevalent in the Middle East, North Africa, and South and East Asia (Kandiyoti 1988). Patriarchal family ideologies frequently support abuse as a means of disciplining wives. If the husband (and often his wife) accept such an ideology, he is more likely to use violence within the relationship (Johnson, 2006). In many cultures men are more familiar with violence, more comfortable with it as a control tactic, and more skilled in its use (Johnson, 2006).

Within classic patriarchy, women are married young into households headed by their husbands' fathers. In rural Bangladesh, Muslim women can legally select a spouse, but normally it is the father or elder brother who decides. Guardianship then passes from father to the spouse. The new bride is then subordinate to men and elder women within the family. Within Bangladesh's patriarchal system, division of labor remains gendered, with women working inside while men work outside of the home. For the most part,

husbands appropriate the earnings of working wives. Transgression of patriarchal norms by a wife is interpreted as disobedience, and a husband's violent response is thereby justifiable punishment (Yount et al., 2013). This patriarchal system enables male ownership of women, aggression and dominance as measurements of masculinity, as well as acceptance of physical chastisement and violence. In conjunction, patriarchal institutions assign the majority of the responsibility for raising children and thereby encourage a woman's economic dependence her spouse (Johnson, 2008; Johnson, 2006).

Counts, Brown & Campbell suggest that societies with strict community sanctions against violence, coupled with sanctuaries for abused women, yield the lowest levels of partner IPV (COUNTS, 1992). Levinson adds that societies where women do not have easy access to divorce are especially prone to domestic violence (Levinson & Ifrah, 2010). In Bangladesh, women seldom pursue any formal means of help, such as police or the judicial system, in cases of IPV. For example, one study conducted in both rural and urban Bangladesh found only 2% of women who had experienced IPV to have sought any formal help or institutional support (Naved et al., 2006). The frequency of wife beating has been found to be lower where all-women workgroups exist, suggesting that female workgroups may offer protection because they provide women social support, economic independence, and draw them away from isolation (Levinson & Ifrah, 2010).

Characteristics of Families with IPV

Studies conducted in Bangladesh have indicated that the family and social network can play a vital role in the likelihood of IPV (Koenig et al., 2003; Naved & Persson, 2008). Use of violence by parents or elders as a means of control or conflict resolution will often be modeled by the following generation. Isolation and family

privacy has also been found to contribute to higher levels of abuse (O'Doherty & Jones, 2005; Schuler et al., 1996). Families of high stress, conflict, and lower SES are also risk factors for IPV (WHO; Cascardi & Vivian, 1995; Coleman & Straus, 1986; Gelles, 1980; Leonard & Senchak, 1996; Mihalic & Elliott, 1997). Numerous studies found partner violence disproportionately affected women from lower a socioeconomic status (Bates et al., 2004; Fulu et al., 2013). Women in socioeconomically disadvantaged families are more prone to experience an abundance of stressful life events and ongoing chronic stress, which might lead to arguments and subsequent abuses (Lubetkin, Jia, Franks, & Gold, 2005; Peacock, Bland, & Anderson, 1995). Possibly, poverty brings about greater relationship stress and may also highlight perceived inadequacies in a husband for failing to achieve the role of provider (Krug EG et al., 2002; Rahman, Nakamura, Seino, & Kizuki, 2013b). While it is true that women with a greater number of children are prone to experience more IPV, it remains unclear if parity contributes towards IPV or IPV and associated factors contribute to increased childbearing (Ellsberg et al., 2000; Krug EG et al., 2002; Sambisa et al., 2011).

Characteristics of Male Perpetrators

In both rural and urban Bangladesh, research indicates women whose husband has a formal education are less likely to be abused than women whose husband has little or no education (Naved & Persson, 2005; Rapp, Zoch, Khan, Pollmann, & Kramer, 2012; Yount et al., 2013). Witnessing violence, attitudes towards the use of aggression, parental aggression, having been beaten as a child, and prior use of violence were all found to be predictors of intimate partner violence (Riggs & O'Leary, 1996). In Black's review of social science literature from North America, a man who experienced poverty

in childhood and adolescence, low academic achievement and aggressive delinquency at the age of 15 years all strongly predicted physical abuse of partners by men at the age of 21 years (Black, 1999). Substance abuse by the husband, namely alcohol, can increase the likelihood of violence by reducing inhibitions and clouding judgment (Dalal, Rahman, & Jansson, 2009; Fife, Ebersole, Bigatti, Lane, & Huber, 2008). Moreover, mental health issues, insecurity, low self-esteem, and depression in males are risk factors for perpetrating abuses (Fulu et al., 2013). Personality disorders, such as antisocial, aggressive and borderline personality disorders all coincided with higher rates of IPV (Black, 1999; Krug EG et al., 2002). In Dutton and Goodman's conceptualization, coercive partners work to convince their partners that they are lazy, incompetent, stupid, over-sexed, sexually frigid, bad parents, poor wives, and worthless (D. G. Dutton & Goodman, 2005; M. A. Dutton, Kaltman, Goodman, Weinfurt, & Vankos, 2005). An individual who feels worthless does not have the will to resist. A related tactic for reducing the will to resist is legitimation, convincing the target that the intimate partner has the right to control and punish (Johnson, 2006). Women of Muslim and more conservative households have also reported higher odds of IPV than women of other religions (namely Hindu in Bangladesh) (Naved & Persson, 2008).

Characteristics of Female Victims

A number of studies in Bangladesh have found that women with more education report less violence by their husband (Bates et al., 2004; Rahman, Nakamura, Seino, & Kizuki, 2013a; Sambisa et al., 2011). Furthermore, other research conducted in Bangladesh suggests that having more education than one's husband does not increase the odds of IPV (Rapp et al., 2012). Women of Bangladesh who marry at a younger age

or who are presently in a marriage with dowry demands have consistently reported increased odds of IPV (Dalal et al., 2009; Naved & Persson, 2008; Rahman et al., 2013a). Women having witnessed violence as child or having been abused as a child are risk factors. An absent or rejecting father can also be a risk factor for IPV among women (Krug EG et al., 2002). It has been suggested that experiencing these abuses and rejections as a child can influence future victimization and perpetration of partner abuse. (Hotaling & Sugarman, 1986; Kalmuss, 1984; Leonard & Senchak, 1996; Shook, Gerrity, Jurich, & Segrist, 2000). Research regarding the association between employment of women and risk of IPV in Bangladesh is mixed. For example, two studies reported employment and microfinance programs to be a protective factor for women, in contrast to one study indicating microfinance programs to be a risk factor (Koenig et al., 2003; Naved & Persson, 2005; Rahman et al., 2013a). Lastly, mental health issues, such as depression, might put one at risk for IPV (Devries et al., 2013).

IPV Typology Theory:

The previously outlined ecological model is helpful in exploring and addressing common risk and protective factors of IPV, but is limited in explaining the nature of violent relationships. Recent research suggests violent relationships are not best understood as one broad homogenous group (Caldwell, Swan, & Woodbrown, 2012; Holtzworth-Munroe & Stuart, 1994; Johnson & Leone, 2005; Tweed & Dutton, 1998). In Western nations, it is reported that men and women use IPV at similar frequencies and bidirectional IPV is the most common type of violent relationship (Archer, 2002; Bazargan-Hejazi et al., 2014; Charles, Whitaker, Le, Swah, & DiClamente, 2011). Johnson's framework, which is the most cited among typology theories, characterizes

two overarching typologies of IPV known as "situational couple violence" (also referred to as common couple violence) and "intimate terrorism" (Johnson & Leone, 2005). Situational couple violence is usually characterized by mutual acts of aggression between partners, but neither partner demonstrates a controlling or domineering behavior (Johnson & Leone, 2005; Johnson, 2008; Johnson, 2006). In intimate terrorism, which is less common, a batterer uses controlling tactics, such as economic abuse, coercion and threats, intimidation, emotional abuse, and isolation, to demonstrate power over the victim (Graham-Kevan, Zacarias, & Soares, 2012; M. P. Johnson, 2008). Perpetrators of intimate terrorism often have a personality disorder and victims tend to want to escape, are less satisfied with the relationship, and more likely to seek help (Johnson & Leone, 2005; Johnson, 2008; Johnson, 2006). Johnson later added "violent resistance" and "mutual violent resistance" to his typology theory, but both are considered to be less prevalent (Johnson, 2008). Violent resistance describes relationships in which one partner is violent and controlling and the other partner is violent, but not controlling. When both partners are violent and controlling, the relationship is described as mutual violent resistance (Johnson, 2008). Few researchers have examined typology theories in the context of developing countries, with none presently known in the country of Bangladesh (Emery, Wu, & Tsolmon, 2015; Graham-Kevan et al., 2012; Tiwari, Chan, et al., 2015; Tiwari, Fong, et al., 2015; Tsai, Tomlinson, Comulada, & Rotheram-Borus, 2016).

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Chapter 2: Research Aims and Methodology

Sylhet Context:

Sylhet is one of seven major administrative regions, otherwise known as divisions, in Bangladesh. The 2007 Bangladesh Demographic and Health Survey (BDHS) highlighted many socioeconomic, health, and cultural disparities contrasting Sylhet from other divisions. Sylhet had the highest percentage of men (27.2%) and women (35.2%) with no education. Rates of men's unemployment (5.2%) and women's unemployment (83.2%) were also the highest. Disparity in employment was even more pronounced considering Sylheti men reported the highest percentage of seasonal (16.9%) and occasional (1.7%) employment. Thus, only 76.2% of Sylheti men had yearlong employment, nearly 20% below the national average of 93.3%. Moreover, Sylhet had the highest TFR (3.7) and under-five mortality rate (107/1000 live births) of all divisions.

Sylheti women were most likely to report not having authority to make decisions alone (without consulting husband) regarding their own health care, their child's health care, major household purchases, purchases for daily needs, or visiting friends or family. In roughly 20% of marriages, husbands had total control over how a wife's income is used; almost double that of other divisions. Only 45.5% of women surveyed in Sylhet were allowed to go alone to a health center or hospital, much higher than the national average (65.8%). Over forty percent (40.8%) of Sylheti women reported at least one reason that a husband was justified for beating his wife, higher than the national average of 36.1%. Fourteen percent (14.3%) of Sylheti women reported that a husband was justified in beating his wife if she refused sex, highest for any division. In surprising

contrast, 41.7% of married Sylheti women reported having experienced physical or sexual abuse by their husband in their lifetime, lower than the national average of 53.3%.

Projahnmo Background and Community Context:

Since 2002, large community-based studies were implemented in the Sylhet district of Bangladesh to assess the burden and risk factors for adverse perinatal and neonatal outcomes. To conduct these studies, a partnership known as "Projahnmo" (Project for Advancing Health of Newborns and Mothers) was established in the Sylhet district of Bangladesh. Projahnmo is comprised of Bangladeshi institutions including the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR,B), Bangladeshi non-governmental organizations [Shimantik and Dhaka Shishu Hospital], Bangladesh Ministry of Health and Family Welfare, and Johns Hopkins Bloomberg School of Public Health. The trial area of was selected because of poor access to health care and the presence of nongovernmental organizations (NGOs) with the ability to scale-up evidence-based interventions (Baqui et al., 2008).

From December 2001 until March of 2002, in-depth interviews were conducted with women who had recently delivered, relatives of these women, and traditional birth attendants in the Sylhet district of Northeast Bangladesh as part of the Projahnmo study, a community-based intervention trial of a package of maternal and newborn care interventions. After an initial baseline survey in early 2003, a cluster-randomized controlled trial was conducted from July, 2003 until December, 2005 to determine the effect of a community-based newborn-care intervention package implemented through two service-delivery strategies in the northeastern Bangladesh. The study area covered a population of 480,000 in three rural sub-districts (Beanibazar, Zakigani, and Kanaighat)

of the Sylhet district, selected for having high rates of neonatal mortality (NIPORT et al., 2005). Neonatal mortality significantly decreased in the home-care arm, which utilized locally recruited and trained female CHWs and community mobilization activities, and is further described elsewhere (Baqui et al., 2008). This intervention laid the groundwork for subsequent studies focused on improving maternal and newborn health in this rural Sylheti population of Bangladesh (Mullany et al., 2009).

Parent Study Design (Healthy Fertility Study):

In December of 2007, the Healthy Fertility Study (HFS), a quasi-experimental study, started enrolment in four unions to test an integrated package maternal and newborn health and family planning (MNH/FP). Two unions received an integrated MNH/FP package and two comparison unions received MNH care promotion only. Additional funding made expansion possible, thus resulting in a study area of eight unions, four of which were selected for intervention and four selected to serve as a comparison.

All pregnant women identified by CHWs in these four unions were offered enrolment in the HFS. CHWs are locally recruited young women with an education of at least grade 10 and received 3 weeks of basic MNH training, covering behaviour change communication, clinical assessment of neonates, and hands-on clinical training. An additional 3 days of training on healthy birth timing and spacing, postpartum family planning, and contraceptives methods was provided for those in the intervention unions. Intervention details are described elsewhere (Ahmed et al., 2013). For all women consenting, a baseline survey was given upon enrolment. A total sample size of 4,430 postpartum women was recruited to evaluate changes in the primary outcome of healthy

birth spacing (24 months or greater between births) and secondary outcomes of an increase in postpartum contraceptive use and reduction in unmet need. To monitor the aforementioned outcomes of interest, all eligible mothers were interviewed at 3, 6, 12, 18, 24, 30, and 36 months by interviewers. Mother's background information, index childbirth and health outcomes, and subsequent family planning practices were followed prospectively. The study cohort was completed with an endline survey in January of 2014. With exception to sociodemographic variables collected at baseline, all survey data analysed in this dissertation are from the endline survey.

Parent Study Sample Size:

The aims of this dissertation were not the primary focus of the Healthy Fertility Study. Hence, sample size was calculated for objectives specified elsewhere (Ahmed et al., 2013). As reported by Ahmed, "To measure a 25% decrease in the proportion of women with a birth interval of less than 24 months with 80% power and 5% significance level would require a sample size of 1,181 per study arm. Taking into account a design effect of 1.5, we conservatively estimated the sample size to be 1,772 per study arm. We assumed a 20% loss to follow-up (10% per year), which further increased the sample size to 2,215 per study arm. Therefore, we planned to enroll a total of 4,504 pregnant women in the study. This sample size is also sufficient to examine the differentials in birth-to-next pregnancy interval between the study arms, given that the number of pregnancies is higher than the number of births. As an example, the sample size required is reduced to 3,398 if birth-to-next pregnancy is conservatively considered to be 20% in the control area and 25% reduction is expected in the intervention arm with design-effect of 1.5, loss to follow-up of 20%, power 80%, and alpha of 0.05 (Ahmed et al., 2013)."

Eligibility and Enrolment:

All identified married pregnant women in the study area were eligible for participation in the parent study. After identification of pregnancy, CHWs required informed consent to participate in the study. Only consenting women whose live born babies who were visited by the Village Health Workers (VHWs) within 7 days after birth and were alive at the time of visit were enrolled in the study. Mothers of babies delivered in facilities were enrolled at home after returning from the facility. Women who delivered in a different location than where they were initially identified were enrolled in the location of their delivery. At endline, a total of 3,996 were available for interview.

Table 2: Healthy Fertility Study 36 Month (Endline) Survey Study Recruitment (Intervention Unions: Manikpur, Kajalshar, Dashkin Banigram, Jhingabari. Control Unions: Sultanpur, Kholachara, Paschim Digirpar, Purba Digirpar)

Study Area (8 Unions)	Recruited for Survey	Participants	%
HFS Intervention (4 Unions)	Success	**2003**	**92.13**
	Not success	**171**	
	Total sought	**2174**	
HFS Control (4 Unions)	Success	**2018**	**93.30**
	Not success	**145**	
	Total sought	**2163**	

Study Site: Sylhet, Bangladesh (Subdistricts Beanibazar, Zakiganj, and Kanaighat)

Figure 3: Map of intervention and comparison Unions of the Healthy Fertility Study site in Sylhet District, Bangladesh

Union	Number of Women	Percent
Jhingabari	520	13.1%
Dakshin Banigram	450	11.4%
Kajalshar	459	11.6%
Manikpur	546	13.8%
Paschim Dighir Par	309	7.8%
Purba Dighir Par	358	9.0%
Kholachora	754	19.0%
Sultanpur	570	14.4%
Total	3,966	100%

Table 4: Sociodemographic information of women in endline survey (n=3,966)

Characteristics	Number	Mean (SD)	Percent
Age (Mean, SD)		31.97 (5.39)	
20-24 years	264		6.66%
25-29 years	1,105		27.86%
30-34 years	1,343		33.86%
35-39 years	847		21.36%
40+	407		10.26%
Obstetric Status			
Pregnant	301		7.59%
Postpartum < 6 months	291		7.34%
Postpartum 6-12 months	294		7.41%
Neither Pregnant nor Postpartum	3,080		77.66%
Parity (total live births)			
1	899		22.67%
2	815		20.55%
3	750		18.91%
4+	1,502		37.87%
Mother's education		4.25 (3.58)	
No schooling	1,365		34.42%
1-5 years	1,291		32.55%
>5 years	1,310		33.03%
Husband's education		3.97 (4.04)	
No schooling	1,612		40.65%
1-5 years	1,227		30.93%
>5 years	1,127		28.42%
Household wealth quintile			
Lowest	708		17.85%
Second	790		19.92%
Middle	845		21.31%
Fourth	806		20.32%
Highest	817		20.60%
Religion			
Islam	3,706		93.44%
Hindu/Others	260		6.56%
Father abused Mother			
Yes	291		7.34%
No	2,979		82.45%
Don't Know	696		17.55%
Members in household		6.69 (3.47)	
<5	1,155		29.12%
5-9	2,150		54.21%
10+	661		16.67%
NGO member			
Yes	490		12.40%
No	3,461		87.60%

Significance of Present Study:

Examining the burden and associated factors of IPV within the specific rural community context of Sylhet, Bangladesh is critical. Study findings can aid in the decision-making process for resource allocation and guide health worker training protocol at the local level while contributing to the limited knowledge base. Identification of at-risk individuals for IPV within the study population allows for the planning of future in-depth studies and interventions for those most vulnerable. Assessing associations between IPV and depressive symptoms provides insight into local comorbidities and mental health burdens. Furthermore, comparing and contrasting the characteristics and complexities of violent relationships in Sylhet to present typology theories may yield insight to more effective IPV prevention and treatment efforts, whereby interventions are tailored to better suit the specific type of relationship in which violence occurs (Bazargan-Hejazi et al., 2014; Charles, Whitaker, Le, Swah, & DiClamente, 2011; Johnson & Leone, 2005; Melander, Noel, & Tyler, 2010; Renner & Whitney, 2012). How prevalent is IPV? Who is most vulnerable to IPV? Are women sharing their experiences of IPV and receiving help? To whom are they sharing these experiences? Are these women more likely to be at risk for depressive symptoms? Are relationships with IPV similar in nature or is there evidence for heterogeneity? This study does the necessary work of answering these important questions and sheds light on the present state of IPV in communities of rural Bangladesh.

Summary of Primary Research Aims and Hypotheses:

The primary research aims (and corresponding hypotheses) of this dissertation are as follows:

Paper 1 Primary Research Aim

To determine the prevalence and associated factors of intimate partner violence (IPV) among married women of reproductive age in rural Bangladesh

Hypotheses

Lower socioeconomic status (education and wealth) will be associated with increased odds of having experienced IPV.

Paper 2 Primary Research Aim

To examine the relationship of IPV and depressive symptoms among married women of reproductive age in rural Bangladesh

Hypotheses

Physical and sexual IPV will be positively associated with depressive symptoms. Moreover, having experienced multiple types of IPV, more frequent IPV, and/or more severe IPV will be associated with greater odds of experiencing depressive symptoms.

Paper 3 Primary Research Aim

To explore the validity of "situational couple violence" and "intimate terrorism" IPV typology in rural Bangladesh

Secondary Aim A: To inspect the relationship between IPV and communication patterns

of married couples of reproductive age in rural Bangladesh

Secondary Aim B: To explore "controlling" patterns (a proxy based upon reasons for abuse) of women's husbands and associations with IPV and depressive symptoms

Hypotheses

Cluster analysis will yield distinct groupings of abusive relationships consistent with Johnson's IPV typology theory. Two abusive relationship types will emerge: 1) A larger "situational couple violence" cluster characterized by less violence and bi-directional conflict and 2) A smaller "intimate terrorism" cluster characterized by elevated violence and controlling patterns.

Secondary Aim A: Women in relationships engaging in less constructive communication and more destructive communication will be more likely to experience severe IPV, frequent IPV, and depressive symptoms.

Secondary Aim B: Women in marriages with a "controlling" husband will be more likely to experience severe IPV, frequent IPV, and depressive symptoms.

Key Measures and Variables:

Sociodemographic information, such as age, education, wealth, religion, and parity, were collected through a structured face-to-face interview by a CHW at baseline of the HFS study. Behavioral health dimensions including depressive symptoms, communication patterns, intimate partner violence, and relationship characteristics were obtained face-to-face by trained interviewers at the respondent's home during the endline survey completed in January of 2014.

Measuring IPV:

Current reviews of IPV studies demonstrate that screening tools for IPV are effective in identifying victims of violence, yet results may vary depending upon the screening tool(s) used and the method(s) of administration (Nelson et al., 2012; Chang et al., 2012). This study utilized a revised version of the Conflict Tactics Scale (CTS) developed by WHO and has been used in international settings. The CTS screening instrument employs direct questions on specific violent acts (slapped, punched, kicked, etc.) and the time period (lifetime, past year) in which they occurred (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The CTS was developed based upon conflict theory, which assumes that conflict is inevitable, but that use of violence to resolve conflict is not. The purpose of the scale is to assess the extent of violence in a concrete manner through use of specific acts and events. While the scale does not take into account the context of the conflict, there is strong evidence of validity and reliability for determining the prevalence and extent of abuses (Maw & Presse, 1996; Straus, Hamby, BoneyMcCoy, & Sugarman, 1996). The revised scale has been translated into Bangla and was validated in Bangladesh (Garcia-Moreno et al., 2006). While the scale is helpful in

ascertaining concrete types and patterns of violence against women, the questions do not capture the context in which the acts occurred. Questions from the IPV questionnaire regarding the specific act are as follows: ***Does your husband ever… Push you, shake you, or throw something at you?; Slap you?; Twist your arm or pull your hair?; Punch you with his fist or something that could hurt you?***; ***Kick you, drag you or beat you up?***; ***Try to choke you or burn you on purpose?; Threaten or attack you with a knife, gun, or any other weapon?; Physically force you to have sexual intercourse with him even when you did not want to?*** In order to determine the frequency of events, participants were asked a follow up question if they answered yes to any of the aforementioned questions: ***If yes, how often did this happen during the last 12 months? Often; Only sometimes; Not at all.***

Measuring Depressive Symptoms:

Assessment of depressive symptoms was determined utilizing the Edinburgh Postnatal Depression Scale – Bangladesh Version (EPDS-B). The EPDS-B includes 10 items, each assessed on a 4-point scale (0-3). The EPDS-B has a total range of 0 – 30 and higher scores signify more depressive symptoms (in the past 7 days) (EPDS; Cox et al. 1987). Five items assess dysphoric mood, two items assess anxiety, one item each for guilt, ability to cope with life, and suicidal ideation. The EPDS is internationally the most commonly used measure for assessment of postnatal depression and has been utilized across many countries and languages with a 12/13 cutoff, although criterion validation studies have showed different cut-offs to be optimal in detecting major depressive disorder (Boyd, Le, & Somberg, 2005; Cox, Holden, & Sagovsky, 1987). The original EPDS yielded an 86% sensitivity and 78% specificity using 12/13 cutoff in

Scotland and similarly high levels of sensitivity and specificity were produced among multiple translated versions using this cutoff (Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001). The scale (EPDS-B) was validated in Bangladesh with a sensitivity of 89% and specificity of 87% utilizing a 9/10 cutoff (Gausia, Fisher, Algin, & Oosthuizen, 2007). The mean score for the clinically depressed women was 14.89 (SD 6.17) and 4.63 (SD 3.76) for non-cases.

Though this study also includes women outside of the perinatal period, there were no significant differences in the means of depressive symptoms (EPDS-B) between women who were pregnant (n=261), post-natal < 6 months (n=255), postnatal 6-12 months (n=250), or neither pregnant nor postpartum (n=2,678). Similarity in EPDS-B score means irrespective of obstetric status, adjusting for obstetric status in modeling, and prior validation of the EPDS among non-postnatal women, support use of the EPDS-B as a measurement for depressive symptoms in our population (Cox, Chapman, Murray, & Jones, 1996). The scale demonstrates a relatively good internal reliability with a Cronbach's alpha of 0.77 for the EPDS-B in our study population.

Measuring Relationship Dynamics (Input Variables):

Relationship dynamics including relationship satisfaction, trust, commitment, and communication patterns are considered important aspects of relationship quality (Riggs & O'Leary, 1989). These dynamics were measured through use of the outlined adapted scales in order to achieve the third primary research aim of this dissertation. Specific questions are available in the following panel (Figure 4: Panel of questions to assess input variables).

Figure 4: Panel of questions to assess input variables

Survey Questions Included in Cluster Analysis

Constructive Communication Subscale (range: 3-30)
(1="very unlikely" thru 10="very likely")
We try to discuss the problem
We express our feelings to each other
We suggest possible solutions and compromises

Destructive Communication Subscale (range: 3-30; All 3 included separately: 1-10)
(1="very unlikely" thru 10="very likely")
I call my husband names, swear at him, or attack his character
My husband calls me names, swears at me, or attacks my character
We blame, accuse and criticize each other

Commitment Subscale (range: 5-45)
(1="not at all" thru 9 = "extremely")
I expect my love for my husband to last for the rest of my life
I can't imagine ending my relationship with my husband
I view my relationship with my husband as permanent
I am committed to maintaining my relationship with my husband
I have confidence in the stability of my relationship with my husband

Interpersonal Trust Subscale (range: 7-56)
(1= "strongly agree" thru 7 = "strongly disagree." Items 3,4,7,8 reversed scoring)
My husband is primarily interested in his own welfare
There are times when my husband cannot be trusted
My husband is perfectly honest and truthful with me
I feel I can trust my husband completely
My husband is truly sincere in his promises
I feel that my husband does not show me enough consideration
My husband treats me fairly and justly
I feel that my husband can be counted on to help me

Dyadic Satisfaction (range: 7-42)
(1="Never" and 6="All of the Time")
How often do you discuss or have you considered divorce, separation or termination of your marriage?
How often do you or your husband leave the house in anger after a fight?
How often do you think that things between you and your husband are going well?
Do you confide in your husband?
Do you ever regret that you married?
How often do you and your husband quarrel?
How often do you and your husband get on each other's nerves?

[Sources: ***Commitment*** (Adapted from Sternberg Triangular Love Scale: http://vivanautics.com/pdf/Sternberg1997.pdf); ***Interpersonal Trust Scale*** (Adapted from: "The dyadic trust scale: Toward understanding Interpersonal Trust in close relationships," by Larzelere and Huston, Journal of Marriage and the Family, 42(3). Copyright 1980 by the National Council on Family Relations, Minneapolis, MN); ***Dyadic* Satisfaction** (Adapted from Subscale from Dyadic Adjustment Scale; Spanier, 1976; Tzeng, O. C. S. (1993). Measurement of love and intimate relations. Westport, CT: Greenwood Publishing Group, Inc.); ***Communication Patterns Questionnaire*** (Adapted from: Christensen, A., & Sullaway, M. (1984). Communication Patterns Questionnaire. Unpublished questionnaire, University of California, Los Angeles.)]

Communication Patterns

Six items from the Communication Patterns Questionnaire were utilized to assess constructive and destructive communication patterns between women and their husbands. Each item ranged from 1-10, with 1 being "very unlikely" and 10 being "very likely" to occur. Three items were utilized to determine constructive communication and three items were used to determine destructive communication, yielding reliability coefficients of 0.82 and 0.70 respectively (Christensen, 1984). A value greater than 2 on the Likert scale was interpreted as an affirmative answer. For cluster analysis, all three questions pertaining to destructive communication were included for weighting purposes.

Dyadic Satisfaction

Seven questions from the Dyadic Adjustment Scale, each ranging from 1-6, were combined to form a composite score assessing level of satisfaction in marriage (Spanier, 1976; Tzeng, 1993). Higher scores indicate a greater level of unrest, conflict, and dissatisfaction. Lower scores indicate satisfaction and relative tranquility. The scale reliability coefficient was 0.78 with a possible range of 7-42.

Trust

Eight questions, each with a range of 1-7, were adapted from the Dyadic Trust Scale and added together to form a composite subscale measuring trust (Huston, 1980). Scores ranged from 14-56 with higher scores indicating a greater level of trust between partners. The alpha coefficient was 0.67, which is slightly lower than a 0.70 reliability range cutoff followed by some researchers. It was decided to include this sub-scale in cluster analysis for the sake of multidimensionality.

Commitment

Five questions, each with a range of 1-9, were extracted from the Sternberg Triangular Love Scale and added together to develop a relationship commitment subscale (Sternberg, 1997). Total scores ranged from 12-45 with higher scores indicating a greater level of commitment and stability. The alpha coefficient for the five questions was 0.72.

Statistical Analysis:

Study 1

We estimated the prevalence of IPV, and sub specifications thereof, as the proportion of women indicating having experienced violent acts out of all women participating in the study at endline (n=3,966). The exact binomial 95% confidence intervals were calculated for the estimated proportion of IPV prevalence. Both lifetime and current year estimates of each type of violence were assessed.

Mixed effects logistic regression was used to analyze variables associated with IPV, which takes into account community-level variables and clustering methodologies that can possibly modify the relationship between the individual-level variables and IPV (Koenig, Ahmed, Hossain, & Khorshed Alam Mozumder, 2003). This method was necessary to adjust for clustering of the parent study at the Union-level (lowest tier of government level located within sub-districts serving approximately 20,000 people) and applied to all of the following models. Final risk factor models were constructed in a three-step sequence starting with individual factors [Model1] and progressively adding familial information [Model2] and thereafter adding membership of an NGO at the communal level [Model3], each of which account for clustering to directly estimate odds ratio and standard error (Liang and Zeger, 1986, Zeger and Liang, 1986). For the 3 models, covariates showing moderate strength of association (P <0.20) in bivariate analysis were included in multivariate models in addition to primary covariates of interest. Collinear variables were dropped when necessary and a final community model was used for the reported adjusted odds ratio (AOR) for each variable.

Analysis was conducted using STATA (version 13) statistical package (StataCorp, 2009). The melogit procedure (STATA) fits mixed-effects models for binary outcomes (experienced IPV or didn't experience IPV) and allows for levels of nested clusters of random effects (Merlo et al., 2006). The regression function used for the mixed effects model is as follows:

Logit(pi) = M + $\beta_1$individual characteristics + $\beta_2$family characteristics + $\beta_3$community characteristics + E_U

M = overall mean probability (prevalence) expressed on the logistic scale

$\beta_1$individual characteristics = regression coefficients for the individual (age, parity, pregnancy status, education)

$\beta_2$family characteristics = regression coefficients for the family (religion, husband's education, abuse of mother, wealth, number of household members) covariates

β_3 community characteristics = regression coefficient for the community (NGO membership) covariate

E_U = Union level residual

Study 2

For the purpose of our estimation of IPV exposure, we used specific violent acts of IPV taken from our survey. We estimated the prevalence of being at risk for depressive symptoms as the proportion of women scoring a 10 or more on the EPDS-B out of all women participating in the study. A cutoff score of 13 or more was also used for a less sensitive comparison that has also been used in international settings. The exact binomial 95% confidence intervals were calculated for the estimated proportion of risk for depressive symptoms prevalence. Mixed effects logistic regression was used to analyze associations between various forms of IPV and depressive symptoms. Use of a

mixed effect model helped to account for the possibility of similarities among women living in the same community (unions/clusters) and the clustered study design, directly estimating the odds ratios and standard errors (Liang and Zeger, 1986, Zeger and Liang, 1986). Covariates showing moderate strength of association (P <0.20) in bivariate analysis were included in multivariate models in addition to primary covariates of interest. All tests involved unadjusted univariate models in addition to multivariate analysis controlling for possible confounders including women's age, parity, pregnancy or postpartum status, husband's education, wealth, household size, history of family abuse, NGO involvement, and community cluster. Additionally, models adjusting for forms of IPV other than the primary IPV exposure of interest were explored to assess independent associations.

Analysis was conducted using STATA (version 13) statistical package (StataCorp, 2009). The melogit procedure (STATA) fits mixed-effects models for binary outcomes (EPDS equal to or greater than a score of 10) and allows for levels of nested clusters of random effects (Merlo et al., 2006). The regression function used for the mixed effects model is as follows:

Logit(pi) = M + $\beta_1$individual characteristics + $\beta_2$family characteristics + $\beta_3$community characteristics + E_U

M = overall mean probability (EPDS of 10 or higher) expressed on the logistic scale

$\beta_1$individual characteristics = regression coefficients for the individual (act(s) of IPV, age, parity, pregnancy status, education) covariates

$\beta_2$family characteristics = regression coefficients for the family (religion, husband's education, abuse of mother, wealth, number of household members) covariates

β_3 community characteristics = regression coefficient for the community (NGO membership) covariate

E_U = Union level residual

To further elaborate on the detected association between IPV and depressive symptoms (EPDS-B scores), a generalized linear model adjusting for covariates showing moderate strength of association (P<0.20) and clustering was used to estimate differences in EPDS-B scores among subgroups. Robust standard errors were used to account for the dependence between individuals in a Union, the community unit of clustering (STATA procedure vce(cluster Union)).

Study 3

Cluster analysis is an empirical procedure of categorizing data into groups, known as clusters, based upon similarity or dissimilarity with other observations (Tweed & Dutton, 1998). Hence, final cluster solutions should demonstrate homogeneity within clusters and heterogeneity between clusters. There is a plethora of clustering methods and it is recommended to use multiple techniques to assess the legitimacy of a proposed theory. Selection of variables to include in clustering is important and must be related to the theory under scrutiny (Giudici, 2003). To achieve Aim 3 of this dissertation, 9 variables related to existing IPV typology theory were included in cluster analysis. These variables were selected to help distinguish "intimate terrorism" and "situational couple violence." The following table presents the mean values for the 9 input variables used to determine clusters (Table 3: Cluster analysis input variables).

Table 3: Cluster analysis input variables

Variables Used to Cluster (range), n = 402	mean	sd
Constructive communication (3-30)	16.8	4.8
Frequency of wife's verbal abuse (1-10)	2.7	1.8
Frequency of husband's verbal abuse (1-10)	3.9	2.2
Frequency of mutual verbal abuse (1-10)	4.1	2.0
Commitment (5-45)	35.5	5.6
Trust (7-56)	12.4	5.3
Satisfaction - dyadic adjustment (7-42)	17.1	5.4
Types and frequency of physical abuse (0-14)	3.1	2.5
"Controlling" reasons for abuse (0-7)	1.2	0.8

Two subsequent cluster analysis procedures were conducted on the 9 aforementioned variables in this study (Heir, 1995). The first cluster analysis entails the use of a hierarchical procedure to determine the optimal number of clusters for partitioning of the data. All 9 input variables were assessed by Likert scale, but treated as continuous measures and standardized through use of Z-scores. Though standardizing ordinal values is not optimal, this approach is often used for clustering analysis to mitigate the more undesirable weighting effects of comparing scales with varying ranges (Sandrine Pavoine, 2009). As a result, all input variables have equal influence in the partitioning procedure. The hierarchical method used in this study to assess the ideal number of clusters (abusive relationship types) was Ward's clustering method. Ward's is the only agglomerative method based on sum-of-squares criterion. Observations are merged based on the optimal value of the error sum of squares, creating clusters that minimize within-group dispersion at each fusion (of observations) (Legendre, 2014). The distance measure most commonly used for Ward's method is the Euclidian distance, which is based on the distance between two points in Euclidean space (a straight line). For *n*-dimensional space, the distance is:

$$d(p,q) = \sqrt{(p_1 - q_1)^2 + (p_2 - q_2)^2 + \cdots + (p_i - q_i)^2 + \cdots + (p_n - q_n)^2}.$$

d = distance

p and q = two points in Euclidian space

(p1 – q1) = distance between two points in Euclidean space vector 1 (input variable 1)

(pn – pn) = distance between two points in Euclidean space for each additional vector.

A dendrogram is used to display the multivariate distance (assessed by Ward's method with Euclidean distance) at which observations have been sub grouped. In our study, either a 2 or 3 cluster solution was evident as fitting the data best (Further explained in Chapter 5 Figure 12: Ward's Hierarchical Cluster Analysis Dendrogram).

To accomplish the second cluster analysis method, the two or three clustered solution (derived from the aforementioned Ward's method) is then imputed for K-means clustering. The K-means procedure requires a priori identification of the number of clusters for which the data must be partitioned. Cluster centroids are acquired in the aforementioned first step (Ward's agglomerative procedure) and are used as initial seed points for K-means (non-hierarchical) cluster analysis. A cluster centroid is the middle of a cluster, otherwise identified as the mean of all vectors (input variables) included. These centroids act as coordinates to begin the K-means clustering process, rather than starting from random points. The K-means clustering procedure can be reduced to two alternating stages. In the assignment stage, each observation is assigned to the cluster resulting in the least within-cluster sum of squares. For example, each woman (identified by her 9 input variables) is added to a cluster to which she is most similar (closest to the means of the assigned cluster). The second stage of the K-means procedure involves the

recalculating of the cluster means (centroid) after the acquisition of the newest member. This process is repeated until all observations (women) belong to a cluster. To assess reliability, the K-means clustering process was repeated many times using random seed points and alternate variable orders, both of which can effect clustering outcomes. T-tests and ANOVAs were conducted to compare clusters on mean scores and the chi square test was used to compare clusters on categorical variables. All statistical analysis was conducted with the STATA 13 software.

Data Entry and Quality Monitoring:

Data forms collected from the Sylhet field site were entered into the database using customized data entry programs that include range and consistency checks. Detection of omissions and inconsistencies between variables (e.g. time and date inconsistencies) are built into these programs to allow for immediate detection of simple errors. Any problems identified were reported back to the field team to ensure the highest quality data.

Ethical Approval:

The primary study as described was approved by the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health and the Ethical Review Committee of the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR,B) and was registered under clinical trial registry.

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Chapter 3 (Study 1): Prevalence and associated factors of intimate partner violence (IPV) among married women of reproductive age in rural Bangladesh

ABSTRACT*

Objective: To estimate the prevalence and associated factors for physical and sexual intimate partner violence (IPV) among married women of reproductive age in rural Bangladesh.

Design: This cross-sectional study uses data from a household survey of 3,966 women in the Sylhet district of Bangladesh conducted in 2014 as part of an endline of a quasi-experiment. The original study, known as the Healthy Fertility Study, was a cluster-randomized trial designed to measure the effect of a community-based postpartum family planning program on the primary outcome of healthy birth spacing (Ahmed et al., 2013). 4,430 married women were recruited during pregnancy at baseline and 3,966 of these women were available for the endline survey.

Results: Among women in our study sample, 28.8% had ever experienced physical or sexual IPV by their spouse and 13.2% of women had experienced a form of physical or sexual IPV in the past year. The odds of having experienced physical or sexual IPV in the past year were greater among less educated women (AOR = 2.42, 95% CI: 1.86-3.14), as well as for women whose husbands were less educated (AOR = 1.64, 95% CI: 1.23-2.18). Younger women also reported greater odds for experiencing IPV in the past year (AOR = 1.50, 95% CI: 1.01-2.25). The prevalence and forms of IPV varied

immensely among neighboring unions (communities) in rural Bangladesh. Of women experiencing sexual or physical IPV, only 31% indicated they had told someone about their experience. Family and neighbors were the most frequently told persons and the most likely to intervene. In contrast, only 1% of women who had experienced physical or sexual IPV in the past year told police, clerics, health workers, and counselors altogether.

Conclusion: In rural Bangladesh, the burden of IPV is high and there are many factors associated with IPV. Women do not often speak of these experiences nor are formal avenues for assistance via health workers, counselors or police accessed. Though all study participants were informed of their right to refrain from answering any undesired questions, women were willing to disclose their IPV experiences in their home with a locally trained health worker when asked (all women answered, but to what extent of those who did not to share their IPV experiences is unknown). Younger women in comparatively greater isolation than their counterparts, as indicated by living in households with no adults other than their spouse were at greater risk of IPV. The perinatal period, a relatively higher period of contact between women and health resources, could include IPV screening should future community-based interventions be designed. Given a context of limited resources, such an approach could reduce the need for additional infrastructure and personnel investments while gaining access to some of the most vulnerable women. A targeted IPV intervention approach in Sylhet should focus on couples with lesser education, regardless of wealth status. Furthermore, due to great variation in the prevalence of physical and sexual IPV between neighboring communities (Unions), IPV prevention and intervention approaches should include

community-based approaches and work with local leaders and organizations.

INTRODUCTION

The World Health Organization defines intimate partner violence (IPV) as "any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship." Worldwide, it is estimated that one in three women will experience physical and/or sexual violence at some point in their lives, most of which will occur within an intimate partner relationship (WHO, 2014). The World Health Organization's World Report on Violence and Health identifies that violence perpetrated by husbands or male partners is "one of the most common forms of violence against women" (Krug, Mercy, Dahlberg, & Zwi, 2002). IPV is a clear violation of human rights and can have devastating effects on women's physical and mental health (WHO, 2006; World Report on Violence and health, 2002). Victims of violence are at a higher risk for depression, suicide attempts, chronic pain syndromes, psychosomatic disorders, physical injury, gastrointestinal disorders, irritable bowel syndrome, and a variety of reproductive health consequences (Garcia-Moreno, 2013). The consequences of abuse can be long-lasting (Felitti et al., 1998; Koss, Koss, & Woodruff, 1991) and the harsher and more frequent the abuse, the greater the impact on a woman's health (Felitti et al., 1998; Follette, Polusny, Bechtle, & Naugle, 1996; Leserman et al., 1996; McCauley et al., 1995; Walker et al., 1999)

IPV is ubiquitous and prevalence varies between and within countries, ranging between 15 and 71% (Garcia-Moreno et al., 2006; Krug et al., 2002). While IPV is of great concern globally, it disproportionately affects developing countries (Jayatilleke, Poudel, Yasuoka, Jayatilleke, & Jimba, 2010; Kishor S, 2004). According to the most

recent estimates (2013) by the World Health Organization, higher income countries have a lower prevalence of lifetime physical and/or sexual IPV of 23.2%, in comparison to a 30.0% lifetime prevalence globally. Bangladesh has a comparatively high IPV, with an estimated half of all women having experienced physical violence in the home (Krug et al., 2002). Across the country, women in Bangladesh experience high levels of physical, emotional, and sexual abuse (Wahed & Bhuiya, 2007). Population-based survey findings are divergent, with estimates of lifetime prevalence of physical IPV to be between 42% and 76% and annual rate to be about 16% to 67% (Bates, Schuler, Islam, & Islam, 2004; Decker et al., 2008; Garcia-Moreno et al., 2006; Schuler, Hashemi, Riley, & Akhter, 1996).

IPV is often difficult to identify because it most often occurs within the home, can be highly stigmatizing to the family, and frequently occurs in contexts where legal systems and cultural norms do not treat any of these actions as a crime (Bass, Annan et al. 2013). In Bangladesh, many women in Bangladesh who experience abuse are silent about their experience (Naved, Azim, Bhuiya, & Persson, 2006). Reasons for silence included high acceptance of violence, stigma, and fear of greater harm. This in part, may explain how varying survey methodologies, such as who conducts the interviews and the privacy of the setting, yield divergent results. While studies exploring IPV in Bangladesh have been on the increase, further efforts are needed to both understand and intervene (Bates et al., 2004; Decker et al., 2008; Koenig, Ahmed, Hossain, & Khorshed Alam Mozumder, 2003; Silverman, Decker, Kapur, Gupta, & Raj, 2007).

The Millennium Development Goals (MDGs) have stressed gender equality, women's empowerment and improvement of maternal health. The newly established

Sustainable Development Goals continue to aim to "achieve gender equality and empower all women and girls." In conjunction, the United Nations General Assembly has declared, "We must ensure zero tolerance of violence against or exploitation of women and girls (United Nations General Assembly, 1993)." Provision of intervention programming for IPV remains limited in lower and middle income countries, yet studies have found that effective mental health services can be implemented and show significant positive influence on mental health and functioning among victims of IPV (Bass et al., 2013). The consequences of not intervening can be disastrous in Bangladesh, where fatality due to partner abuse makes up a considerable proportion of maternal deaths and has been associated with host of other poor health outcomes (Fauveau, Koenig, Chakraborty, & Chowdhury, 1988; Krug EG et al., 2002). Hence, it is vital to both reveal local burdens and examine associated risk factors of IPV wherein future community-based programming can incorporate opportune interventions.

Examining the burden and associated factors of IPV within the specific community context are critical, as IPV studies across Bangladesh have yielded divergent findings. Identification of characteristics associated with women who experience IPV, in addition to women's perceived reasons for experiencing IPV, provides insight for planning future studies and interventions tailored for local women most in need. Revelation of the IPV burden and associated factors aids decision-making for resource allocation, as well as raises awareness of important local public health needs. It is particularly important to advocate for women who experience IPV, as they may face circumstances that prevent their own ability to advocate for themselves. Discovering whether women share IPV experiences and with whom they share, sheds light on

possibilities for future screening and intervention. Moreover, identification of factors associated with IPV contributes to the sparse knowledge base of IPV in rural Bangladesh. This study describes the burden and factors associated with IPV in a cohort of married women of reproductive age in rural Bangladesh.

METHODS

Study Design

This cross-sectional study uses data from a household survey of 3,966 women in the Sylhet district of Bangladesh conducted in 2014 as part of an endline of a quasi-experiment. The original study, known as the Healthy Fertility Study, was a clustered trial designed to measure the effect of a community-based postpartum family planning program on the primary outcome of healthy birth spacing (Ahmed et al., 2013). 4,430 married women were recruited during pregnancy at baseline and 3,966 of these women were available for the endline survey.

Study Setting and Population

In December of 2007, the Healthy Fertility Study (HFS), a quasi-experimental study, started enrolment in four Unions (the smallest administrative unit with a health center) to test an integrated package maternal and newborn health and family planning (MNH/FP) in the Sylhet district of North-eastern Bangladesh. Two unions received an integrated MNH/FP package and two comparison Unions received MNH care promotion only. Additional funding made expansion possible, thus resulting in a study area of eight unions, four of which received intervention and four selected to serve as a comparison.

The study cohort was completed with an endline survey in January of 2014, which is the data examined in this study.

Figure 5: Map of intervention and comparison Unions of the Healthy Fertility Study Area in Sylhet District, Bangladesh

Study Implementation

All pregnant women identified by CHWs (Community Health Workers) in these eight unions were offered enrolment in the HFS. CHWs are locally recruited young women with an education of at least grade 10 and received 3 weeks of basic MNH training, covering behaviour change communication, clinical assessment of neonates, and hands-on clinical training. An additional 3 days of training on healthy birth timing and spacing, postpartum family planning, and contraceptives methods was provided for those

in the intervention unions. Intervention details are described elsewhere (Ahmed et al., 2013).

For all women consenting, a baseline survey was given upon enrolment. A total sample size of 4,430 postpartum women was recruited to evaluate changes in the primary outcome of healthy birth spacing (24 months or greater between births) and secondary outcomes of an increase in postpartum contraceptive use and reduction in unmet need. To monitor the aforementioned outcomes of interest, all eligible mothers were interviewed at 3, 6, 12, 18, 24, 30, and 36 months by interviewers. Mother's background information, index child birth and health outcomes, and subsequent family planning practices were followed prospectively. The study cohort was completed with an endline survey in January of 2014.

Inclusion and Exclusion Criteria

All identified pregnant women in the study area were eligible for participation in the study. After identification of pregnancy, CHWs recorded their informed consent to participate in the study and only the women who consented were enrolled as study participant. All the live born babies who were visited by the Village Health Workers (VHWs) within 7 days after birth and were alive at the time of visit were eligible to be enrolled in the study. Babies delivered in facilities were enrolled at home after return from the facility if enrollment criteria were met. Women who delivered in a different location than they were initially identified were enrolled in the location of their delivery and intervention was assigned accordingly. For the endline survey, a total of 3,966 were available for interview of the originally recruited 4,337.

Assessment of Exposure Variables

Socio-demographic information, such as age, education, wealth, religion, and parity, were collected through a structured face-to-face interview by a CHW upon enrollment into the HFS study

Assessment of Outcome Variable

The primary outcome in this study is IPV. This study utilized a revised version of the Conflict Tactics Scale developed by WHO that is used to ask respondents if they have experienced specific acts of physical and sexual violence in addition to the frequency of each act. The revised scale has been translated into Bangla and was validated in Bangladesh (Garcia-Moreno et al., 2006). While the scale is helpful in ascertaining concrete types and patterns of violence against women, the questions do not capture the context in which the acts occurred. Questions from the IPV questionnaire regarding the specific act are as follows: ***Does your husband ever… Push you, shake you, or throw something at you?; Slap you?; Twist your arm or pull your hair?; Punch you with his fist or something that could hurt you?***; ***Kick you, drag you or beat you up?***; ***Try to choke you or burn you on purpose?; Threaten or attack you with a knife, gun, or any other weapon?; Physically force you to have sexual intercourse with him even when you did not want to?*** In order to determine the frequency of events, participants were asked a follow up question if they answered "yes" to any of the aforementioned questions: ***If yes, how often did this happen during the last 12 months? Often; Only sometimes; Not at all.*** Verbal attacks were determined by level of agreement with a statement from the Communication Patterns Questionnaire: ***My husband calls me names, swears at me, or attacks my character.*** Women indicating any other answer than "very

unlikely" were interpreted as having experienced some level of verbal abuse (Christensen, 1984).

Data Quality Assurance

Data forms collected from the field site were entered into the database using customized data entry programs that include range and consistency checks. Detection of omissions and inconsistencies between variables (e.g. time and date inconsistencies) are built into these programs to allow for immediate detection of simple errors. Any problems identified were reported back to the field team to ensure the highest quality data. The primary study as described was approved by the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health and the Ethical Review Committee of the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR,B) and was registered under clinical trial registry.

Statistical Analyses

We estimated the prevalence of IPV, and sub specifications thereof, as the proportion of women indicating having experienced violent acts out of all women participating in the study. For the purpose of our estimation, we used the aforementioned definitions and specific violent acts of IPV taken from the adapted WHO multi-country survey tool. The exact binomial 95% confidence intervals were calculated for the estimated proportion of IPV prevalence. Both lifetime and current year estimates of each type of violence were assessed.

Mixed effects logistic regression (STATA procedure melogit) was used to analyze variables associated with IPV, which takes into account community-level variables and

clustering methodologies that can possibly modify the relationship between the individual-level variables and IPV (Koenig et al., 2003). Final risk factor models were constructed in a three-step sequence starting with individual factors [Model1] and progressively adding familial information [Model2] and thereafter adding membership of an NGO at the communal level [Model3], each of which account for clustering to directly estimate odds ratio and standard error (Liang and Zeger, 1986, Zeger and Liang, 1986). For the 3 models, covariates showing moderate strength of association (P <0.20) in bivariate analysis were included in multivariate models in addition to primary covariates of interest. Collinear variables were dropped when necessary and a final community model was used for the reported adjusted odds ratio (AOR) for each variable included. Analysis was conducted using STATA (version 13) statistical package (StataCorp, 2009). The following table lists all variables included in analysis for this study (see Study 1 Variables). The Healthy Fertility Study (the parent study) was not an intervention that included components to reduce IPV. To confirm this, preliminary analysis was conducted and revealed no differences in IPV prevalence between the control and intervention groups.

Table 4: List of main variables under analysis

Variables	Type
Dependent (Outcome) Variables:	
Physical Violence	
Any physical or sexual abuse (lifetime)	Binary
Any physical or sexual abuse (past year)	Binary
Push, shake or throw something	Binary
Slap	Binary
Twist arm or pull hair	Binary
Punch	Binary
Kick, drag, or beat	Binary
Choke or burn	Binary
Threaten or attack with weapon	Binary
Force sex	Binary
Verbal	
Husband calls me names, swears at me, or attacks my character	Ordinal
Independent Variables:	
Maternal Variables:	
Age (in years)	Ordinal
Parity	Ordinal
Mother's education	Ordinal
Status (pregnant; <6 mo pp; <12 mo pp; not pregnant nor pp)	Categorical
Family-Level Variables:	
Wealth (PCA of assets)	Ordinal
Religion	Binary
Husband's education	Ordinal
Mother had been beat by father (yes; no; unsure)	Categorical
Household size (<5; 5-9; 10+)	Ordinal
Community-Level Variable:	
Involvement with NGO or financing project	Binary
Union (cluster)	Categorical

RESULTS:

Individual (and Obstetric) Profile

A total of 3,966 ever-pregnant women participated in the endline survey. The mean ± SD age of the women was 32 ± 5.4 years. All women had previously given birth, 22.7% having given birth to one child, 20.6% to two children, 18.9% to three children, and 37.9% to four or more children. At time of interview, 301 (7.6%) were pregnant, 291 (7.3%) were less than 6 months postpartum, 294 (7.4%) were 6 months to a year postpartum, and 3,080 (77.7%) were neither pregnant nor postpartum. Women's education levels varied, with 34.4% having received no formal education, 32.6% with one to five years of education, and 30.0% with more than five years of schooling (see Table: Background information of participants).

Family Profile

The majority of women of women self-identified as Muslim [3,706 (93.4%)], while 260 (6.6%) were of other religions, namely Hindu. Education levels of spouses varied, with 40.7% having received no formal education, 30.9% with one to five years of education, and 28.4% with more than five years of schooling. The majority of women (82.5%) reported that their fathers did not abuse their wife (mother of interviewee), whereas 7.3% did indicate having seen abuse of their mother and 17.6% were unsure. At baseline, the average number of persons in a household was 6.7 with a standard deviation of 3.5. Twenty-five percent (25.0%) of households were composed of 4 or less members, 46.8% had 5-9 members, and 14.9% had 10 or more members, with the largest household composed of 33 members.

Table 5: Sociodemographic profiles of married women

Background information of participants (n=3,966)			
Characteristics	**Number**	**Mean (SD)**	**Percent**
Age		31.97 (5.39)	
<30 years	1,250		31.6%
30-34 years	1,285		32.5%
35+ years	1,416		35.8%
Obstetric Status			
Pregnant	301		7.6%
Postpartum < 6 months	291		7.3%
Postpartum 6-12 months	294		7.4%
Neither Pregnant nor Postpartu	3,080		77.7%
Parity (total live births)			
1	899		22.7%
2	815		20.6%
3	750		18.9%
4+	1,502		37.9%
Mother's education		4.25 (3.58)	
No schooling	1,365		34.4%
1-5 years	1,291		32.6%
>5 years	1,310		33.0%
Husband's education		3.97 (4.04)	
No schooling	1,612		40.7%
1-5 years	1,227		30.9%
>5 years	1,127		28.4%
Household wealth quintile			
Lowest	708		17.9%
Second	790		19.9%
Middle	845		21.3%
Fourth	806		20.3%
Highest	817		20.6%
Religion			
Islam	3,706		93.4%
Hindu/Others	260		6.6%
Father abused Mother			
Yes	291		7.3%
No	2,979		82.5%
Don't Know	696		17.6%
Members in household		6.69 (3.47)	
<5	1,155		29.1%
5-9	2,150		54.2%
10+	661		16.7%
NGO member			
Yes	490		12.4%
No	3,461		87.6%

Community Profile

Though the 8 unions surveyed were in the same region, physical and/or sexual IPV lifetime and past-year prevalence varied by Union. While women from Kajalsbar (41.4%) and Kholachora (43.1%) reported the highest prevalence of having ever experienced IPV by their husbands, women from Jhingabari (18.1%) reported having experienced the highest prevalence of IPV in the past year. Women from Jhingabahri (12.9%) and Dakshin Banigram (11.3%) reported the highest prevalence of forced sex in the past year. Variation in the prevalence of IPV between unions is evident. Twelve percent (12.4%) of women (n=490) belonged to an NGO or community organization, with Kholachora having the highest participation (27.7%) and Purba Dighir Par having the lowest (2%).

Table 6: IPV (physical and/or sexual) prevalence by Union of Sylhet, Bangladesh

Union	n	Percent	Lifetime Physical or Sexual IPV	Past Year Physical or Sexual IPV	Past Year Physical IPV	Past Year Sexual IPV	Verbal Attacks by Spouse
Kajalshar	459	11.6%	41.4%	15.3%	14.6%	3.7%	44.4%
Kholachora	754	19.0%	43.1%	15.0%	14.9%	1.7%	47.6%
Manikpur	546	13.8%	19.6%	13.0%	12.6%	1.5%	17.4%
Sultanpur	570	14.4%	29.6%	9.6%	8.1%	2.6%	27.9%
Dakshin Banigram	450	11.4%	28.2%	13.3%	3.3%	11.3%	2.7%
Jhingabari	520	13.1%	24.2%	18.1%	7.5%	12.9%	8.9%
Paschim Dighir Par	309	7.8%	15.5%	12.3%	11.0%	3.2%	33.3%
Purba Dighir Par	358	9.0%	14.2%	5.9%	5.6%	0.6%	29.9%
Total	3,966	100%	28.8%	13.2%	10.1%	4.6%	27.4%

Lifetime IPV = Lifetime Prevalence of Physical or Sexual Violence; Past Year IPV = Prevalence of Physical or Sexual Violence in the Past 12 Months; Past Year Sexual = Prevalence of Forced Sex in the Past 12 Month; Verbal Attacks = Husband calls me names, swears at me, or attacks my character.

Prevalence of IPV

We calculated the number and proportion of women who experienced physical and sexual violence by their spouse in the past year, as well as in their lifetime. Twenty-nine percent of women indicated having experienced physical or sexual IPV by their husband, with 13.2% having experienced such abuses in the past year.

Table 7: IPV experiences of married women of reproductive age (n=3,966)

Type of Abuse	Ever Abused by Husband		Abused in Last 12 Months	
	number	percentage	number	percentage
Slapped	972	24.5%	362	9.1%
Pushed/Shaken/Thrown At	554	14.0%	210	5.3%
Twist Arm/Pulled Hair	266	6.7%	111	2.8%
Punched	365	9.2%	154	3.9%
Kicked/Dragged/Beaten Up	356	9.0%	154	3.9%
Choked/Burned	59	1.5%	25	0.6%
Threatened with Knife/Gun	30	0.8%	14	0.4%
Forced Sex	286	7.2%	183	4.6%
Any Physical or Sexual Abuse	1,143	28.8%	522	13.2%
One Type of Abuse	403	10.2%	201	5.1%
2-3 Types of Abuse	452	11.4%	186	4.7%
4-5 Types of Abuse	229	5.8%	77	1.9%
6+ Types of Abuse	59	1.5%	58	1.5%

Associated Factors of IPV

Women 20-29 years of age experienced a relatively higher prevalence of physical or sexual IPV in comparison to those ages 35-45 (AOR = 1.50, 95% CI: 1.01-2.25). The prevalence of current IPV appears to decrease with age. We did not detect a significant association between parity and IPV. Current pregnancy or postpartum status of women was not round to be related to having experienced IPV in the past year. Women with

more education had a significantly less prevalence of IPV than those with little or no education (AOR = 2.42, 95% CI: 1.86-3.14).

Husband's education was associated with IPV, with greater education appearing to be a significant protective factor against IPV (AOR = 1.64, 95% CI: 1.23-2.18). Wealth, as identified by household assets, was not associated with IPV. Though parity was not associated with IPV prevalence, women of households with a greater number of people were found to be less likely to have experienced IPV in comparison with women living with less people in the house (AOR = 1.61, 95% CI: 0.96-2.69). Women who reported that their father abused his wife (the mother of the interviewee) were also significantly more likely to have experienced IPV in the past year (AOR = 4.41, 95% CI: 3.31-5.87). Lastly, women who were not members of an NGO were less likely to have experienced IPV (AOR = 0.77, 95% CI: 0.55-0.96).

Table 8: Sociodemographic characteristics and crude association with past year physical and/or sexual IPV among married women in rural Bangladesh (n=3,966)

Characteristics	No IPV (n)	Percent	IPV (n)	Percent	Total (n)	Percent	p-value
Age							0.60
<30 years	1,076	31.4%	174	33.5%	1,250	31.6%	
30-34 years	1,122	32.7%	163	31.4%	1,285	32.5%	
35+ years	1,234	36.0%	182	35.1%	1,416	35.8%	
Obstetric Status							0.79
Pregnant	261	7.6%	40	7.66%	301	7.6%	
Postpartum < 6 months	255	7.4%	36	6.91%	291	7.3%	
Postpartum 6-12 months	250	7.3%	44	8.43%	294	7.4%	
Not Pregnant nor Postpartum	2,678	77.8%	402	77.01%	3,080	77.7%	
Parity (total live births)							0.54
1	777	22.6%	122	23.4%	899	22.7%	
2	716	20.8%	99	19.0%	815	20.6%	
3	658	19.1%	92	17.6%	750	18.9%	
4+	1,293	37.5%	209	40.0%	1,502	37.9%	
Mother's education							0.00
No schooling	1,139	33.1%	226	43.3%	1,365	34.4%	
1-5 years	1,112	32.3%	179	34.3%	1,291	32.6%	
>5 years	1,193	34.6%	117	22.4%	1,310	33.0%	
Husband's education							0.00
No schooling	1,342	39.0%	270	51.7%	1,612	40.7%	
1-5 years	1,071	31.1%	156	29.9%	1,227	30.9%	
>5 years	1,031	29.9%	96	18.4%	1,127	28.4%	
Household wealth quintile							0.01
Lowest	619	18.0%	89	17.1%	708	17.9%	
Second	704	20.4%	86	16.5%	790	19.9%	
Middle	724	21.0%	121	23.2%	845	21.3%	
Fourth	673	19.5%	133	25.5%	806	20.3%	
Highest	724	21.0%	93	17.8%	817	20.6%	
Religion							0.05
Islam	3,208	93.2%	498	95.4%	3,706	93.4%	
Hindu/Others	236	6.9%	24	4.6%	260	6.6%	
Father abused Mother							0.00
Yes	196	5.7%	95	18.2%	291	7.3%	
No	2,682	77.9%	297	56.9%	2,979	75.1%	
Don't Know	566	16.4%	130	24.9%	696	17.6%	
Members in household							0.05
<5	993	28.8%	162	31.0%	1,155	29.1%	
5-9	1,858	53.9%	292	55.9%	2,150	54.2%	
10+	593	17.2%	68	13.0%	661	16.7%	
NGO member							0.01
Yes	406	11.8%	84	16.1%	490	12.4%	
No	3,026	88.2%	435	83.9%	3,461	87.6%	
Total	3,444	86.8%	522	13.2%	3,966	100%	

Note: Unadjusted values

Table 9 :Odds of physical or sexual IPV in the past year by sociodemographic grouping (multivariable mixed effects model)

	Individual Level Model				Family Level Model				Community Level Model			
Variable	OR	P>z	[95% CI]		OR	P>z	[95% CI]		OR	P>z	[95% CI]	
Age												
<30 years	1.50	**0.01**	1.09	2.05	1.55	**0.01**	1.12	2.14	1.53	**0.01**	1.11	2.12
30-34 years	1.18	0.18	0.92	1.52	1.20	0.16	0.93	1.55	1.20	0.16	0.93	1.55
35+ years	Ref.				Ref.				Ref.			
Parity												
1	Ref.											
2	0.88	0.40	0.65	1.18	0.82	0.20	0.60	1.11	0.82	0.20	0.60	1.11
3	0.87	0.39	0.63	1.20	0.81	0.23	0.58	1.14	0.82	0.25	0.59	1.15
4+	0.98	0.90	0.71	1.36	0.88	0.48	0.62	1.25	0.88	0.46	0.62	1.24
Pregnancy Status												
Not pregnant or pp	Ref.				Ref.				Ref.			
Pregnant	1.02	0.92	0.71	1.45	1.01	0.95	0.70	1.46	1.00	0.99	0.69	1.44
<6 months pp	0.94	0.72	0.64	1.36	0.97	0.87	0.66	1.42	0.97	0.88	0.66	1.42
6-12 months pp	1.19	0.31	0.85	1.68	1.24	0.23	0.87	1.76	1.19	0.34	0.83	1.71
Education												
None	2.42	**0.00**	1.86	3.14	1.81	**0.00**	1.34	2.43	1.76	**0.00**	1.30	2.37
1-5 years	1.82	**0.00**	1.41	2.36	1.55	**0.00**	1.18	2.03	1.54	**0.00**	1.17	2.02
>5 years	Ref.				Ref.				Ref.			
Religion												
Islam					1.50	0.08	0.95	2.35	1.63	**0.04**	1.03	2.57
Other					Ref.				Ref.			
Husband's Education												
None					1.64	**0.00**	1.23	2.18	1.63	**0.00**	1.22	2.17
1-5 years					1.25	0.13	0.94	1.67	1.23	0.16	0.92	1.64
>5 years					Ref.				Ref.			
Mother Abused												
No					Ref.				Ref.			
Yes					4.41	**0.00**	3.31	5.87	4.35	**0.00**	3.26	5.80
Don't Know					2.20	**0.00**	1.74	2.79	2.20	**0.00**	1.74	2.79
Wealth												
Lowest (poorest)					Ref.				Ref.			
Second					0.70	**0.04**	0.50	0.98	0.71	**0.04**	0.51	0.98
Middle					0.94	0.70	0.69	1.28	0.94	0.70	0.69	1.29
Fourth					1.07	0.66	0.78	1.47	1.06	0.71	0.77	1.46
Highest (richest)					0.73	0.07	0.53	1.02	0.73	0.06	0.52	1.02
House Members												
<5 members					1.23	0.21	0.89	1.70	1.23	0.21	0.89	1.70
5-9 members					1.18	0.25	0.88	1.60	1.19	0.26	0.88	1.60
10+ members					Ref.				Ref.			
NGO Member												
Yes									0.73	**0.03**	0.55	0.96
No									Ref.			

Individual Model VOE = .105 and SE =.07; Family VOE = .121 and SE =.08; Community VOE = .122 and SE = .08

Reasons for Abuse

Among women who self-identified as having experienced physical or sexual IPV by their spouse in the past year, the majority (65.2%) indicated their abuses were not instigated, or without reason. The most common reasons given for having experienced IPV were financial crisis (22.9%), disobeying their spouse or elder (21.4%), neglecting house chores (19.7%), and refusing sex (14.8%).

Table 10: Reasons for physical abuse by husband in the past year (n=402)

Women's Perceived Reasons for Physical Abuse	**n**	**%**
Without Reason	262	65.2%
Financial Crisis	92	22.9%
Disobeyed Husband/Elder	86	21.4%
Neglected House Chores	79	19.7%
Refused Sex	57	14.2%
Because Husband Unemployed	29	7.2%
Envy or Malice	27	6.7%
Wife Suspects Infidelity	21	5.2%
Food Crisis	18	4.5%
For Dowry	15	3.7%
Demand of Money From My Family	14	3.5%
Went Out Without Permission	5	1.2%
Husband Suspects Infidelity	5	1.2%
Husband's Drug/Alcohol Use	5	1.2%
Other	4	1.0%
Note: It is possible to answer more than one reason		

Reporting/Sharing of Abuse

Of women who self-identified as having experienced physical or sexual IPV by their spouse in the past year, only about one third (31.2%) told anyone about having experienced abuse. The people women confided in regarding their experiences most often were their parents, in-laws, neighbors, siblings, and extended family. Local leaders, police, clerics, and health workers were seldom told.

Table 11: Who abused women told about experiences of physical IPV by husband (n=402)

Survey Question: Whom did you tell?		
Person Told	**n**	**%**
Nobody	274	68.2%
Anyone	128	31.8%
Mother/Father	61	15.2%
Mother-In-Law	41	10.2%
Neighbor	37	9.2%
Brother/Sister	26	6.5%
Father-In-Law	20	5.0%
Other Relative	19	4.7%
Aunt/Uncle	15	3.4%
Children	7	1.7%
Local Leader	7	1.7%
Friends	3	0.7%
Police	2	0.5%
Cleric	2	0.5%
Doctor/Health Worker	1	0.3%
Counselor	1	0.3%
Other	1	0.3%

Perceptions of Abuse

Table 12: Women's perception of whether husbands treat them fairly

Survey question: "My husband treats me fairly."

	Strongly Agree	Agree	Mildly Agree	Neutral	Mildly Disagree	Disagree	Strongly Disagree	Total
Not Abused								
(%)	49.4	17.4	30.5	0.2	1.0	1.1	0.4	100.0
(n)	1,761	619	1,088	7	34	40	15	3,564
Abused								
(%)	23.9	32.6	32.8	0.8	2.5	5.5	2.0	100.0
(n)	96	131	132	3	10	22	8	402
Total								
(%)	46.8	18.9	30.8	0.3	1.1	1.6	100.0	100.0
(n)	1,857	750	1,220	10	44	62	3,966	3,966

When asked if women felt they were treated fairly by their husband, nearly 90% of women who had been physically or sexually abused in the past year felt that their husband treats them fairly.

DISCUSSION:

Our study found the prevalence of physical and/or sexual IPV to vary vastly across the eight rural Unions surveyed in Sylhet, with lifetime prevalence as high as 43.1% in the Union of Kholachora and as low as 14.2% in Purba Dighir Par and 28.8% as the lifetime prevalence across all communities. Past year prevalence of physical and/or sexual IPV ranged from 5.9% to 18.1%, with a mean of 13.2% for all participants in the study. Women indicating have experienced sexual IPV in the past year was strikingly different across communities, from as low as 1% to as high as 13%. Overall, the lifetime and annual physical and sexual IPV prevalence we observed matched the lower range of similar studies in rural Bangladesh (Bates et al., 2004; Decker et al., 2008; Garcia-Moreno et al., 2006; Schuler et al., 1996). Among ever-married women or men

interviewed for the Demographic Health Survey carried out across all regions of Bangladesh (2007), Sylhet had the lowest percentage (41.7%) of lifetime physical or sexual violence. These findings were surprising given that Sylhet has the poorest health indicators of all regions. This study demonstrates that not only are there disparities from region to region, but also large disparities at the Union level.

Wahed and colleagues (2007) suggest that a significant number of abused women are silent about experiences of violence for reasons including fear of consequences for both themselves and their children and compromising family honor (Wahed & Bhuiya, 2007). The aforementioned DHS survey interviewed either husbands or wives to obtain estimates of IPV in the Sylheti population (n=283). This methodology of interviewing men as well could in part, explain why our prevalence findings were slightly lower. Still, DHS survey estimates for Sylhet were similar to those of Kajalshar and Kholachora, Unions demonstrating the highest lifetime IPV prevalence in our study.

Confirming our hypothesis and in consensus with other studies in Bangladesh, both the education level of the wife and her husband were found to be associated with recent sexual and physical IPV (Bates et al., 2004; Naved & Persson, 2008). In line with power theory, perhaps men with a higher degree of education and perceived power do not need to assert their dominance via IPV. Possibly personal characteristics, such as communication ability or cognitive abilities, which contribute to greater educational attainment, also contribute to conflict resolution skills within marriage.

Some studies in rural Bangladesh have indicated poverty as a common risk factor for IPV, but our study yielded no significant trends, contrasting with our hypothesis that women of less wealth would be more likely experience IPV (Bates et al., 2004; Naved &

Persson, 2005; Sambisa, Angeles, Lance, Naved, & Thornton, 2011). Interestingly, while wealth was not associated with IPV, financial crisis was given as a reason for having experienced physical or sexual violence by 23% of women who self-identified as having experienced violence in the past year. Perhaps, given that the majority of women in Bangladesh live in poverty, financial tension is a common occurrence across all wealth strata. Moreover, our methodology of accounting for wealth through household assets, which is the most common method in developing countries, might not be sensitive to seasonal trends or fluctuations in income that could give rise to stress or conflict. Additionally, household assets do not provide insight as to which household members are contributing funds, which might influence power dynamics and IPV (Sambisa et al., 2011).

In accord with other studies in Bangladesh, married women of younger ages experienced comparatively higher odds of having suffered physical or sexual violence in the past year in comparison to older women (Dalal, Rahman, & Jansson, 2009; Naved & Persson, 2005). Analysis did not suggest a temporary reprieve of physical or sexual violence during pregnancy or postpartum as has been indicated by other studies (Kabir, Nasreen, & Edhborg, 2014; Naved & Persson, 2008). Moreover, we did not find a relationship between parity and IPV. This is particularly interesting when paired with the discovery that the number of persons in the home was associated with IPV. In other words, women in a more isolated environment were more susceptible to physical or sexual abuse. It could be postulated that children in the home, regardless of the number, are not able to intervene. In contrast, living with additional adults, who can intervene, is a protective factor. It may seem counterintuitive that women who were members of an

NGO or community organization had comparatively higher odds of having experienced IPV in the past year, but perhaps the association could be explained by NGOs targeting of vulnerable populations. Another consideration is that a number of NGOs include micro credit programs for women. Such programs might upset the balance of power in relationships and threaten a male's assumptive control over finances (McClennen, 2010). In effect, he might resort to violence to demonstrate his authority.

A number of women indicating having experienced forced sex, in addition to physical violence for refusing sex. In light of Muslim women reporting a higher prevalence of forced sex within marriage in comparison to women of other religions, it may be important to explore and identify common beliefs and attitudes on sexual obligations in marriage. Moreover, physical abuse was often used to discipline women for neglecting household duties. A participant in a qualitative study in rural Bangladesh shared, "People in this community say that a husband can beat his wife and that the wife who takes her husband's beating will go to heaven (Schuler, Lenzi, & Yount, 2011)." Perhaps, collaborating with local Muslim leaders (Imams) to ensure proper interpretation of spousal responsibilities, such as sexual roles and house maintenance, could prove very beneficial in improving local trends and perceptions.

Women of Dakshin Banigram (11.3%) and Jhingabari (12.9%) Unions reported a comparatively higher prevalence of sexual abuse, but also higher levels of education for both men and women. Focused studies on perceptions of a husband's sexual rights in these Unions might shed light on how to intervene. Interestingly, Kajalshar and Kholachora Unions yielded much higher prevalences of lifetime physical and/or sexual IPV, at 41.4% and 43.1% respectively. However, the present prevalence of IPV in these

Unions was close to the mean across all Unions. A positive deviance study on factors that contributed to these decreases in IPV might bring forth ideas for future intervention.

Should interventions be designed for prevention of IPV utilizing a targeted approach, particular focus should be given to younger lesser-educated women living in households with no other or few adults. While that task may seem daunting, our study demonstrates that IPV screening by a locally trained health worker is possible. The perinatal period, when young women frequently interact with health providers, might serve as opportune contact points for disseminating information or making referrals.

In our study, women who experienced IPV rarely shared of their experience with others (31.2%), which is likely an overestimate considering the number of women who may have not felt comfortable sharing their personal experiences of IPV with the interviewers in this study. For some women, it could have been their first time to disclose information concerning their experience(s) of IPV. While our study interviewed women in the privacy of their home and they could decline at any point, there is understandable concern and caution needed when interviewing about matters surrounding IPV. We are grateful to the women who participated and hope our study gives a voice for those who are silent and opens the doors for future intervention.

Strengths and Weaknesses

Due to the cross-sectional design of this study, associations should not be mistaken for causality. Associations observed in the analysis may be the function of some common confounding variable. While the villages in this study were typical of rural Bangladesh, characteristics varied by Union and generalizability of the results is limited.

Reporting bias is another concern in IPV studies, particularly given that this study found a lower prevalence of IPV than other studies. Very possibly, IPV was underreported due to many factors, such as fear. On the other hand, similar studies have found Bangladeshi women unlikely to deny domestic violence due to its endemic nature to the region (Koenig, 2003).

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Chapter 4 (Study 2): Intimate partner violence (IPV) and depressive symptoms of married women of reproductive age in rural Bangladesh

ABSTRACT*

Objective: To examine the relationship of IPV and depressive symptoms among married women of reproductive age in rural Bangladesh

Design: This cross-sectional study uses data from a household survey of 3,966 women in the Sylhet district of Bangladesh conducted in 2014 as part of an endline of a quasi-experiment. The original study, known as the Healthy Fertility Study, was a cluster-randomized trial designed to measure the effect of a community-based postpartum family planning program on the primary outcome of healthy birth spacing (Ahmed et al., 2013). 4,430 married women were recruited during pregnancy at baseline and 3,966 of these women were available for the endline survey. The Edinburgh Postpartum Depression Scale – Bangladesh Version (EPDS-B) was used to assess depressive symptoms and a revised version of the Conflict Tactics Scale was used to ask respondents if they experienced specific acts of physical and sexual violence. Exposure to verbal abuse was determined with use of a question from the Communication Patterns Questionnaire survey tool.

Results: Thirty-four percent (n=1,348) of women reported exposure to physical, sexual or verbal abuse by their spouse in the past year. Using a clinical cutoff of 9/10 for the EPDS-B, as validated by Gausia and colleagues (2007) in Bangladesh, 30.8% (95% CI:

29.4% - 32.3%) of women were at risk for depressive symptoms. The odds of being at risk for depressive symptoms were 2.47 (AOR 95% CI: 2.11, 2.89) more likely among women exposed to at least one form of abuse in the past year than women who reported no exposure. Physical, sexual and verbal abuses were each independently associated with being at risk for depressive symptoms and those who experienced multiple forms or more severe abuses were most likely to demonstrate depressive symptoms.

Conclusion: IPV and being at risk for depressive symptoms often go hand in hand. Study findings indicate the need to address all forms of abuse, whether physical, sexual, or verbal. Resources should be allocated towards IPV prevention strategies and treatment for depressive symptoms. Variation in prevalence of IPV and risk of depressive symptoms across communities surveyed highlight the need for community-based cost-effective interventions.

INTRODUCTION

Intimate partner violence (IPV) is a human rights violation that can severely impair mental and physical health, and at times, lead to death (WHO, 2006). Victims of violence are at a higher risk for depression, suicide attempts, chronic pain syndromes, psychosomatic disorders, physical injury, gastrointestinal disorders, irritable bowel syndrome, and a variety of reproductive health consequences (Garcia-Moreno, 2013). The consequences of abuse can be long-lasting (Felitti et al., 1998; Koss, Koss, & Woodruff, 1991) and studies have suggested the harsher and more frequent the abuse, the greater the impact on a woman's health (Felitti et al., 1998; Follette, Polusny, Bechtle, & Naugle, 1996; Leserman et al., 1996; McCauley et al., 1995; Walker et al., 1999)

The World Health Organization has declared that there is "No health without mental health" (Prince et al., 2007). IPV has been identified as a common contributor to mental health problems (Garcia-Moreno et al., 2006; Naved & Persson, 2008). Most notable of these problems is depressive disorder, which is the leading cause of disability and fourth leading contributor to the global burden of disease worldwide (Campbell & Lewandowski, 1997; Ibrahim, Kelly, Adams, & Glazebrook, 2013). In meta-analysis on intimate partner violence around the globe, World Health Organization found that women having experienced IPV were nearly twice (OR=1.97, 1.56-2.48) as likely to experience depressive episodes. Furthermore, women who chose to commit suicide were over four times more likely to have experienced IPV. In a meta-analysis of international studies, women who had experienced violence were more than twice as likely to be at risk for poor mental health, suicide attempts were found more common in abusive relationships,

and a dose-response relationship between IPV and depressive symptoms was reported (Devries et al., 2013).

Studies examining IPV and depressive symptoms in lower income countries are rare and few have been conducted among women in Bangladesh. In rural northern Bangladesh, perinatal women experiencing poor spousal relationships were five times more likely to indicate maternal depressive symptoms than those with good spousal relationships and women who experienced physical IPV were three times more likely to manifest maternal depressive symptoms (Kabir, Nasreen, & Edhborg, 2014). In rural southwest Bangladesh, Gausia and colleagues found that a history of having been beaten by one's husband either during or before the current pregnancy had the highest association with post-partum depression among all examined variables (Gausia, Fisher, Ali, & Oosthuizen, 2009). To our knowledge, no studies examining IPV and depressive symptoms have been conducted in rural northeastern Bangladesh.

The World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) reported that in 2005, less than 0.5% of heath expenditures by the government went towards mental health (WHO, 2006). Moreover, 67% of these were designated for the only mental health hospital in the country in Dhaka, the urban capital. The total number of human resources working in mental health facilities or private practice is about 1 for every 200,000 people, which is estimated to be even sparser in the rural areas, such as Sylhet. Provision of intervention programming for IPV and/or depression remains limited in lower and middle income countries, yet studies have found that effective mental health services can be implemented and show significant positive

influence on mental health and functioning among victims (Bass et al., 2013; Patel, Simon, Chowdhary, Kaaya, & Araya, 2009; Rahman et al., 2013).

Examining the prevalence of being at risk for depressive symptoms within the rural community context is necessary for raising awareness of mental health needs and influencing policy for appropriate resource allocation. Furthermore, exploring the relationship between IPV and depressive symptoms is critical for gaining insight into the context in which depression occurs and possible modes of intervention.

METHODS

Study Design

This cross-sectional study uses data from a household survey of 3,966 women in the Sylhet district of Bangladesh conducted in 2014 as part of an endline of a quasi-experiment. The original study, known as the Healthy Fertility Study, was a clustered trial designed to measure the effect of a community-based postpartum family planning program on the primary outcome of healthy birth spacing (Ahmed et al., 2013). 4,430 married women were recruited during pregnancy at baseline and 3,966 of these women were available for the endline survey.

Study Setting and Population

In December of 2007, the Healthy Fertility Study (HFS), a quasi-experimental study, started enrolment in four Unions (the smallest administrative unit with a health center) to test an integrated package maternal and newborn health and family planning (MNH/FP) in the Sylhet District of northeastern Bangladesh. Two Unions received an integrated MNH/FP package and two comparison unions received MNH care promotion

only. Additional funding made expansion possible, thus resulting in a study area of eight Unions, four of which received intervention and four selected to serve as a comparison. The study cohort was completed with an endline survey in January of 2014, which is the data examined in this study.

Figure 6: Map of intervention and comparison Unions of the Healthy Fertility Study site in Sylhet District, Bangladesh

Study Implementation

All pregnant women identified by CHWs (Community Health Workers) in these eight Unions were offered enrolment in the HFS. CHWs are locally recruited young

women with an education of at least grade 10 and received 3 weeks of basic MNH training, covering behaviour change communication, clinical assessment of neonates, and hands-on clinical training. An additional 3 days of training on healthy birth timing and spacing, postpartum family planning, and contraceptives methods was provided for those in the intervention Unions. Intervention details are described elsewhere (Ahmed et al., 2013).

For all women consenting, a baseline survey was given upon enrolment. A total sample size of 4,430 postpartum women was recruited to evaluate changes in the primary outcome of healthy birth spacing (24 months or greater between births) and secondary outcomes of an increase in postpartum contraceptive use and reduction in unmet need. To monitor the aforementioned outcomes of interest, all eligible mothers were interviewed at 3, 6, 12, 18, 24, 30, and 36 months by interviewers. Mother's background information, index child birth and health outcomes, and subsequent family planning practices were followed prospectively. The study cohort was completed with an endline survey in January of 2014.

Inclusion and Exclusion Criteria

All identified pregnant women in the study area were eligible for participation in the study. After identification of pregnancy, CHWs recorded their informed consent to participate in the study and only the women who consented were enrolled as study participant. All the live born babies who were visited by the Village Health Workers (VHWs) within 7 days after birth and were alive at the time of visit were eligible to be enrolled in the study. Babies delivered in facilities were enrolled at home after return from the facility if enrollment criteria were met. Women who delivered in a different

location than they were initially identified were enrolled in the location of their delivery and intervention was assigned accordingly. For the endline survey, a total of 3,966 were available for interview of the original 4,337.

Assessment of Exposure Variables

Socio-demographic information, such as age, education, wealth, religion, and parity, were collected through a structured face-to-face interview by a CHW upon enrollment into the HFS study. Behavioral health dimensions including relationship quality, quality of life, depressive symptoms, were obtained face-to-face by trained interviewers at the respondent's home.

The primary exposure variable in this study is IPV. This study utilized a revised version of the Conflict Tactics Scale was used to ask respondents if they have experienced specific acts of physical and sexual violence in addition to the frequency of each act. The revised scale has been translated into Bangla and was validated in Bangladesh (Garcia-Moreno et al., 2006). While the scale is helpful in ascertaining concrete types and patterns of violence against women, the questions do not capture the context in which the acts occurred. Questions from the IPV questionnaire regarding the specific act are as follows: ***Does your husband ever… Push you, shake you, or throw something at you?; Slap you?; Twist your arm or pull your hair?; Punch you with his fist or something that could hurt you?***; ***Kick you, drag you or beat you up?***; ***Try to choke you or burn you on purpose?; Threaten or attack you with a knife, gun, or any other weapon?; Physically force you to have sexual intercourse with him even when you did not want to?*** In order to determine the frequency of events, participants were asked a follow up question if they answered "yes" to any of the aforementioned

questions: ***If yes, how often did this happen during the last 12 months? Often; Only sometimes; Not at all.*** Verbal attacks were determined by level of agreement with a statement from the Communication Patterns Questionnaire: ***My husband calls me names, swears at me, or attacks my character.*** Women indicating any other answer than "very unlikely" were interpreted as having experienced some level of verbal abuse (Christensen, 1984).

Assessment of Outcome Variable

Depressive symptoms were obtained through utilization of the Edinburgh Postnatal Depression Scale – Bangladesh Version (EPDS-B), which includes 10 items, each assessed on a 4-point scale (0-3) with a total range of 0 – 30 and a higher score signifying more depressive symptoms in the past 7 days. Five items assess dysphoric mood, two items assess anxiety, one item each for guilt, ability to cope with life, and suicidal ideation. The EPDS has been accepted internationally for assessment of postnatal depression and has been utilized across many countries and languages with a 12/13 cutoff (Boyd, Le, & Somberg, 2005; Cox, Holden, & Sagovsky, 1987). The original EPDS yielded an 86% sensitivity and 78% specificity using 12/13 cutoff and similarly high levels of sensitivity and specificity were produced among multiple translated versions using this cutoff (Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001). The scale (EPDS-B) was validated in Bangladesh with a sensitivity of 89% and specificity of 87% utilizing a 9/10 cutoff (Gausia, Fisher, Algin, & Oosthuizen, 2007). Our study includes both the validated 9/10 cutoff score for Bangladesh, as well as a less sensitive 12/13 cutoff that has been utilized in international studies for comparison purposes. Given that a binary approach to depressive

symptoms could limit a full picture of its relationship with IPV and the EPDS-B was validated in a different population of Bangladesh, we also used a continuous score and a GLM model to analyze changes in EPDS-B means (depressive symptoms) by IPV exposures. Though this study also includes women outside of the postnatal period, there were no significant differences in the means of depressive symptoms (EPDS-B) between women who were pregnant (n=261), post-natal < 6 months (n=255), postnatal 6-12 months (n=250), or neither pregnant nor postpartum (n=2,678). Similarity in EPDS-B score means irrespective of obstetric status, adjusting for obstetric status in modeling, and prior validation of the EPDS among non-postnatal women, support use of the EPDS-B as a measurement for depressive symptoms in our population (Cox, Chapman, Murray, & Jones, 1996). The scale demonstrates a relatively good reliability with a Cronbach's alpha of 0.77 for the EPDS-B in our study population.

Data Quality Assurance

Data forms collected from the field site were entered into the database using customized data entry programs that include range and consistency checks. Detection of omissions and inconsistencies between variables (e.g. time and date inconsistencies) are built into these programs to allow for immediate detection of simple errors. Any problems identified were reported back to the field team to ensure the highest quality data. The primary study as described was approved by the Institutional Review Board of the Johns Hopkins Bloomberg School of Public Health and the Ethical Review Committee of the International Centre for Diarrheal Disease Research, Bangladesh (ICDDR,B) and was registered under clinical trial registry.

Statistical Analyses

To estimate IPV exposure, we used specific violent acts of IPV gathered from an adapted version of the Conflicts Tactics Scale. We estimated the prevalence of being at risk for depressive symptoms as the proportion of women scoring a 10 or more on the EPDS-B out of all women participating in the study. A score of 13 or more was also used for a less sensitive international comparison. The exact binomial 95% confidence intervals were calculated for the estimated proportion of prevalence of being at risk for depressive symptoms. Mixed effects logistic regression was used to analyze associations between various forms of IPV and being at risk for depressive symptoms. Use of a mixed effect model helped to account for the possibility of similarities among women living in the same community (Unions/clusters), directly estimating the odds ratios and standard errors (Liang and Zeger, 1986, Zeger and Liang, 1986). Covariates showing moderate strength of association (P <0.20) in bivariate analysis were included in multivariate models in addition to primary covariates of interest. All tests involved unadjusted univariate models in addition to multivariate analysis controlling for possible confounders including women's age, parity, pregnancy or postpartum status, husband's education, wealth, household size, history of family abuse, NGO involvement, and community cluster. Additionally, models adjusting for forms of IPV other than the primary IPV exposure of interest were explored to assess independent associations. Lastly, a generalized linear model adjusting for covariates showing moderate strength of association (P<0.20) and clustering was used to estimate differences in EPDS-B scores among subgroups. Variables included in this study are listed in Table 13. Analyses were carried out using STATA version 13.0 (procedures melogit and glm).

Table 13: List of main variables under analysis

Variables	Type
Dependent (Outcome) Variables:	
Edinburgh Postnatal Depression Scale (EPDS-B)	
EPDS-B Score	Ordinal
EPDS-B Score of (10+) and (13+) for Comparisons	Binary
Independent Variables:	
Intimate Partner Violence*:*	
Any Physical or Sexual Abuse (Lifetime)	Binary
Any Physical or Sexual Abuse (Past Year)	Binary
Physical	
Push, Shake or Throw Something	Binary
Slap	Binary
Twist Arm or Pull Hair	Binary
Punch	Binary
Kick, Drag, or Beat	Binary
Choke or Burn	Binary
Threaten or Attack with Weapon	Binary
Sexual	
Force Sex	Binary
Verbal/Emotional	
Husband calls me names, swears at me, or attacks my character	Binary
	Ordinal
Maternal Variables:	
Age (in years)	Ordinal
Parity	Ordinal
Mother's education	Ordinal
Status (Pregnant; <6 months ppm; 6-12 months ppm)	Categorical
Involvement with NGO or Financing Project	Binary
Family-Level Variables:	
Wealth (PCA of assets)	Ordinal
Religion	Binary
Husband's education	Ordinal
Mother had been beat by father (maternal history)	Binary
Household size	Ordinal
Community-Level Variables:	
NGO involvement	Binary
Union	Categorical

RESULTS

Individual (and Obstetric) Profile

A total of 3,966 ever-pregnant women participated in the survey. The mean ± SD age of the women was 32 ± 5.4 years. 3,706 (93.44%) were Muslims, while 260 (6.56%) were of other religions, predominantly Hindu. All women had previously given birth, 22.7% having given birth to one child, 20.6% to two children, 18.9% to three children, and 37.9% to four or more children. At the time of interview, 301 (7.59%) were pregnant, 291 (7.34%) were less than 6 months postpartum, 294 (7.41%) were 6 months to a year postpartum, and 3,080 (77.66%) were neither pregnant nor postpartum.

Family Profile

Education levels of spouses varied, with 40.7% having received no formal education, 30.9% with one to five years of education, and 28.4% with more than five years of schooling. The majority of women (82.5%) reported that their fathers did not abuse their wife (mother of interviewee), whereas 7.34% did indicate having seen abuse of their mother. A considerable amount of women (17.6%) were unsure.

Community Profile

Though the 8 Unions surveyed were in the same region, the percentage of women having experienced physical or sexual IPV in their lifetime, as well as physical or forced sex in the past year greatly varied. Differences in the percentage of experiencing verbal attacks by their husband also greatly differed. While women from Kajalsbar (41.4%) and Kholachora (43.1%) reported the highest prevalence of having ever experienced physical

or sexual IPV by their husbands, women from Jhingabari (18.1%) reported having experienced the highest prevalence of physical or sexual IPV in the past year. Women from Jhingabahri (12.9%) and Dakshin Banigram (11.3%) reported the highest prevalence of forced sex in the past year. Nearly half (47.6%) of women in Kholachora, compared to only 2.7% of women in Dakshin Banigram, reported having experienced verbal attacks by their husband. Variation in the prevalence of IPV between Unions is evident.

Table 14: IPV exposure and depressive symptoms (EPDS-B) among participants by Union of Sylhet, Bangladesh

Union	n	Percent	Lifetime Physical or Sexual IPV	Past Year Physical or Sexual IPV	Past Year Physical IPV	Past Year Sexual IPV	Verbal Attacks by Spouse	EPDS-B 10+	EPDS-B 13+
Kajalshar	459	11.6%	41.4%	15.3%	14.6%	3.7%	44.4%	22.4%	9.6%
Kholachora	754	19.0%	43.1%	15.0%	14.9%	1.7%	47.6%	20.6%	7.8%
Manikpur	546	13.8%	19.6%	13.0%	12.6%	1.5%	17.4%	41.2%	19.6%
Sultanpur	570	14.4%	29.6%	9.6%	8.1%	2.6%	27.9%	42.3%	13.3%
Dakshin Banigram	450	11.4%	28.2%	13.3%	3.3%	11.3%	2.7%	28.0%	9.8%
Jhingabari	520	13.1%	24.2%	18.1%	7.5%	12.9%	8.9%	34.6%	18.1%
Paschim Dighir P	309	7.8%	15.5%	12.3%	11.0%	3.2%	33.3%	35.0%	15.9%
Purba Dighir Par	358	9.0%	14.2%	5.9%	5.6%	0.6%	29.9%	23.7%	9.2%
Total	3,966	100%	28.8%	13.2%	10.1%	4.6%	27.4%	30.8%	12.8%

Prevalence of IPV

We calculated the number and proportion of women who experienced physical or sexual violence by their spouse in the past year, as well as in their lifetime. Nearly 29% of women indicated having experienced physical or sexual IPV by their husband, with 13.2% having experienced such abuses in the past year.

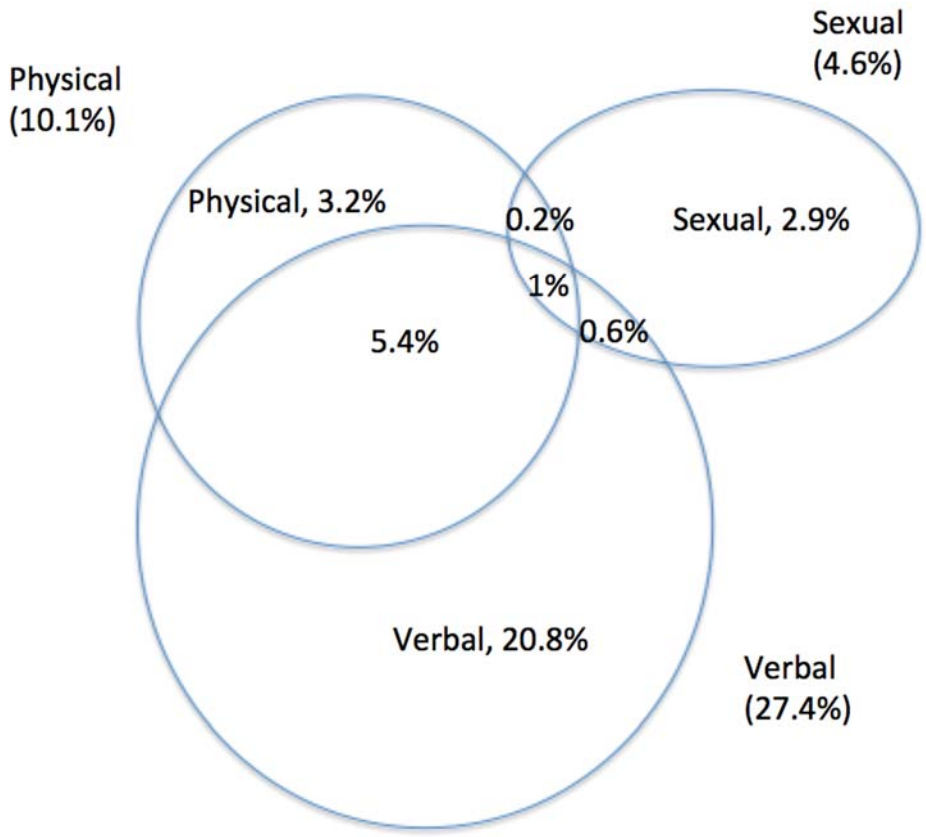
Table 15: IPV experiences by married women of reproductive age (n=3,966)

Type of Abuse	Ever Abused by Husband		Abused in Last 12 Months	
	number	percentage	number	percentage
Slapped	972	24.5%	362	9.1%
Pushed/Shaken/Thrown At	554	14.0%	210	5.3%
Twist Arm/Pulled Hair	266	6.7%	111	2.8%
Punched	365	9.2%	154	3.9%
Kicked/Dragged/Beaten Up	356	9.0%	154	3.9%
Choked/Burned	59	1.5%	25	0.6%
Threatened with Knife/Gun	30	0.8%	14	0.4%
Forced Sex	286	7.2%	183	4.6%
Any Physical	1,040	26.2%	402	10.1%
Any Physical or Sexual Abuse	1,143	28.8%	522	13.2%
One Type of Physical Abuse	403	10.2%	236	6.0%
2-3 Types of Physical Abuse	452	11.4%	173	4.4%
4-5 Types of Physical Abuse	229	5.8%	86	2.2%
6+ Types of Physical Abuse	59	1.5%	27	0.7%

Table 16: Lifetime and past year IPV prevalence (n= 3,966)

Lifetime IPV	number	percentage
Physical	1,040	26.2%
Sexual	286	7.2%
Last 12 Months IPV		
Verbal	1085	27.4%
Physical	402	10.1%
Sexual	183	4.6%
Verbal, Physical, or Sexual	1348	34.0%
Verbal Only	826	20.8%
Physical Only	126	3.2%
Sexual Only	113	2.9%
Verbal and Physical Only	213	5.4%
Verbal and Sexual Only	7	0.2%
Physical and Sexual Only	24	0.6%
Verbal, Physical, and Sexual	39	1.0%

Figure 7: Distribution of co-occurrence of past year exposure to physical, sexual, and verbal/emotional IPV reported among married women in rural Bangladesh



Note: 66% of women reported no physical, sexual or verbal IPV in the past year.

Tetrachoric correlations were used to compare the 3 examined types of IPV (physical, sexual, and verbal) experienced by a woman in the past year. A positive correlation between physical and verbal abuse was significant at 0.000 level with correlation of 0.51 (95% CI, 0.48 - 0.54). A positive correlation between physical and sexual abuse was significant at 0.000 level with correlation of 0.43 (95% CI, 0.39 - 0.47). There was no significant correlation found between sexual and verbal abuse [- 0.03 (95% CI, -0.08, 0.01)].

Sociodemographic Characteristics and Associations with IPV

Younger women (20-30 years of age) reported a relatively higher prevalence of physical and sexual IPV than women older than 35 (AOR 1.53, 95% CI: 1.11, 2.12). We did not detect a significant association between parity or pregnancy status and IPV. Women with little or no education had significantly greater odds of IPV than those who had more than 5 years of education (AOR 1.76, 95% CI: 1.30, 2.37). Wives of men with no education were 1.63 (AOR 95% CI: 1.22, 2.17) more likely to have experienced physical or sexual IPV those who had more than 5 years. Wealth, as identified by household goods, was mildly associated with IPV, but revealed no clear trend. Women whose fathers abused their mothers reported a higher prevalence of physical and sexual IPV ($p<0.00$) and women affiliated with an NGO reported a lower prevalence of IPV ($p<0.03$). For associations refer to Table 17.

Prevalence of Being at Risk for Depressive Symptoms

Using a clinical cutoff of 9/10 for the EPDS-B, as validated by Gausia and colleagues (2007) in Bangladesh, 30.8% (95% CI: 29.4% - 32.3%) were at risk for depressive symptoms. A cutoff of 12/13 for the EPDS-B yielded a 12.8% (95% CI: 11.7% - 13.8%) prevalence of risk for depressive symptoms. The mean score on the EPDS-B was 7.2 (95% CI: 6.5 - 7.9) after adjusting for clustering effects. Depressive symptoms were associated with older age, higher parity, lower education of participant and spouse, being of Islamic faith, having fewer members in household, and not being affiliated with an NGO. No significant association was found between obstetric status (pregnant/postpartum/neither) or wealth status. For associations refer to Table 18.

Table 17: Sociodemographic characteristics and crude association with past year physical and/or sexual IPV among married women in rural Bangladesh (n=3,966)

Characteristics	No IPV (n)	Percent	IPV (n)	Percent	Total (n)	Percent	p-value
Age							0.60
<30 years	1,076	31.4%	174	33.5%	1,250	31.6%	
30-34 years	1,122	32.7%	163	31.4%	1,285	32.5%	
35+ years	1,234	36.0%	182	35.1%	1,416	35.8%	
Obstetric Status							0.79
Pregnant	261	7.6%	40	7.66%	301	7.6%	
Postpartum < 6 months	255	7.4%	36	6.91%	291	7.3%	
Postpartum 6-12 months	250	7.3%	44	8.43%	294	7.4%	
Not Pregnant nor Postpartum	2,678	77.8%	402	77.01%	3,080	77.7%	
Parity (total live births)							0.54
1	777	22.6%	122	23.4%	899	22.7%	
2	716	20.8%	99	19.0%	815	20.6%	
3	658	19.1%	92	17.6%	750	18.9%	
4+	1,293	37.5%	209	40.0%	1,502	37.9%	
Mother's education							**0.00**
No schooling	1,139	33.1%	226	43.3%	1,365	34.4%	
1-5 years	1,112	32.3%	179	34.3%	1,291	32.6%	
>5 years	1,193	34.6%	117	22.4%	1,310	33.0%	
Husband's education							**0.00**
No schooling	1,342	39.0%	270	51.7%	1,612	40.7%	
1-5 years	1,071	31.1%	156	29.9%	1,227	30.9%	
>5 years	1,031	29.9%	96	18.4%	1,127	28.4%	
Household wealth quintile							**0.01**
Lowest	619	18.0%	89	17.1%	708	17.9%	
Second	704	20.4%	86	16.5%	790	19.9%	
Middle	724	21.0%	121	23.2%	845	21.3%	
Fourth	673	19.5%	133	25.5%	806	20.3%	
Highest	724	21.0%	93	17.8%	817	20.6%	
Religion							**0.05**
Islam	3,208	93.2%	498	95.4%	3,706	93.4%	
Hindu/Others	236	6.9%	24	4.6%	260	6.6%	
Father abused Mother							**0.00**
Yes	196	5.7%	95	18.2%	291	7.3%	
No	2,682	77.9%	297	56.9%	2,979	75.1%	
Don't Know	566	16.4%	130	24.9%	696	100%	
Members in household							**0.05**
<5	993	28.8%	162	31.0%	1,155	29.1%	
5-9	1,858	53.9%	292	55.9%	2,150	54.2%	
10+	593	17.2%	68	13.0%	661	16.7%	
NGO member							**0.01**
Yes	406	11.8%	84	16.1%	490	12.4%	
No	3,038	88.2%	438	83.9%	3,461	87.6%	
Total	3,444	86.8%	522	13.2%	3,966	100%	

Table 18: Sociodemographic characteristics and association with depressive symptoms (EPDS-B scores) among married women of rural Bangladesh (n=3,966)

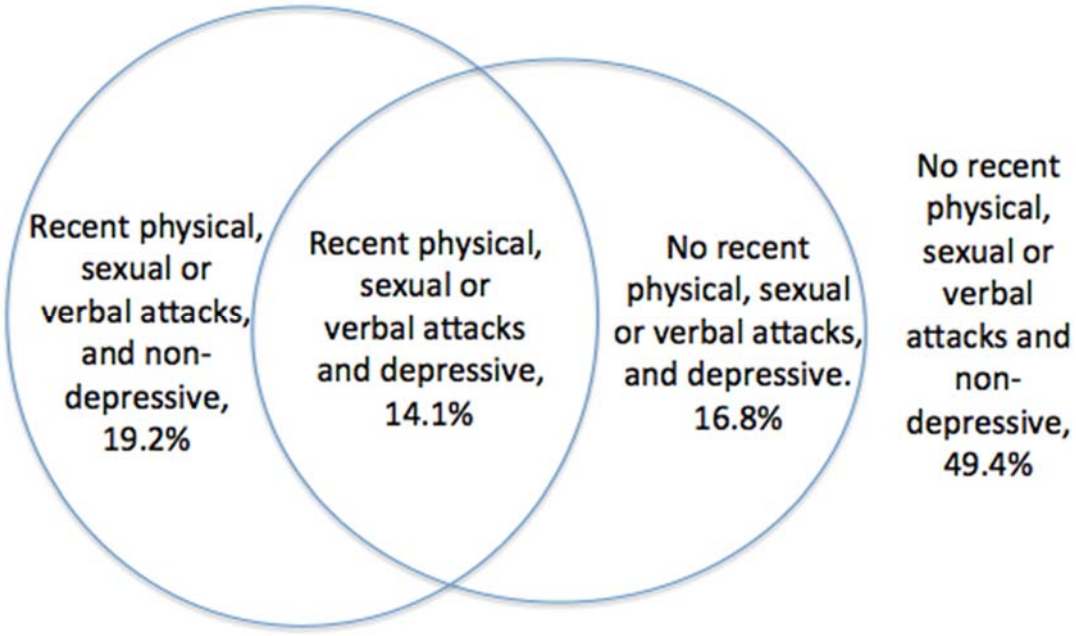
	Crude OR EPDS-B 10+				Crude OR EPDS-B 13+			
Variable	OR	P>z	[95% CI]		OR	P>z	[95% CI]	
Age								
<30 years	0.72	**0.000**	0.61	0.86	0.81	0.07	0.64	1.02
30-34 years	0.75	**0.001**	0.63	0.88	0.74	**0.012**	0.59	0.94
35+ years	Ref.				Ref.			
Obstetric Status								
Pregnant	1.01	0.96	0.77	1.31	1.02	0.96	0.71	1.47
Postpartum < 6 months	1.13	0.36	0.87	1.47	1.25	0.20	0.89	1.77
Postpartum 6-12 months	1.03	0.79	0.80	1.35	1.17	0.89	0.83	1.67
Not Pregnant nor Postpartum	Ref.				Ref.			
Parity (total live births)								
1	Ref.				Ref.			
2	1.03	0.72	0.84	1.28	0.85	0.28	0.63	1.14
3	1.16	0.18	0.93	1.44	0.97	0.86	0.73	1.30
4+	1.32	**0.003**	1.10	1.58	1.05	0.82	0.82	1.35
Mother's education								
No schooling	2.17	**0.00**	1.83	2.57	2.27	**0.000**	1.79	2.89
1-5 years	1.29	**0.04**	1.08	1.55	1.42	**0.008**	1.09	1.83
>5 years	Ref.				Ref.			
Husband's education								
No schooling	1.85	**0.000**	1.56	2.20	2.22	**0.000**	1.74	2.85
1-5 years	1.16	0.13	0.96	1.39	1.36	**0.030**	1.03	1.79
>5 years	Ref.				Ref.			
Household wealth quintile								
Lowest	1.10	0.38	0.88	1.38	1.20	0.24	0.88	1.63
Second	1.05	0.66	0.84	1.31	1.01	0.94	0.74	1.37
Middle	1.10	0.36	0.89	1.37	1.06	0.79	0.79	1.43
Fourth	1.14	0.20	0.93	1.42	1.21	0.90	0.90	1.61
Highest	Ref.				Ref.			
Religion								
Islam	1.45	**0.007**	1.11	1.91	1.34	0.10	0.94	1.93
Hindu/Others	Ref.				Ref.			
Father abused Mother								
No	Ref.				Ref.			
Yes	0.94	0.67	0.71	1.24	1.04	0.84	0.70	1.53
Don't Know	1.43	**0.000**	1.20	1.72	1.44	**0.002**	1.14	1.83
Members in household								
<5	1.27	**0.03**	1.02	1.57	1.14	0.35	0.86	1.54
5-9	1.14	0.20	0.94	1.38	1.06	0.66	0.81	1.38
10+	Ref.				Ref.			
NGO member								
Yes	0.80	**0.04**	0.65	0.99	0.83	0.215	0.62	1.11
No	Ref.				Ref.			

Note: Adjusted for clustering

Comorbidity of IPV and Depressive Symptoms

High comorbidity exists between physical and sexual IPV, verbal attacks and depressive symptoms. In our study population, 19.2% experienced recent physical, sexual or verbal abuse by their spouse and were not at risk for depressive symptoms (EPDS-B 10+), 16.8% did not experience recent IPV and were at risk for depressive symptoms, and 14.1% experienced both recent IPV and were at risk for depressive symptoms (Figure 8). Thirty-four percent (n=1,348) of women were exposed to physical or sexual IPV or verbal attacks by their spouse in the past year. This group of women had 2.47 greater odds (AOR 95% CI: 2.11, 2.89) of being at risk for depressive symptoms (EPDS-B 10+) than those without exposure in the past year (66%, n=2,618).

Figure 8: Exposure to IPV and risk for depressive symptoms (EPDS-B score of 10 or more) among married women of rural Bangladesh (n=3,966)



Physical IPV

Women having experienced physical IPV during marriage were more likely to exhibit risk of depressive symptoms in bivariate modeling (OR 1.27, 95% CI: 1.08, 1.49), but significance disappeared after other covariates were added into modeling (Table 19). Women who experienced physical IPV in the past year had nearly 2 times the odds of being at risk for depressive symptoms (AOR 2.01, 95% CI: 1.52, 2.39) than those who did not, even after adjusting for covariates. This strong association remained even after adjusting for other forms of abuse (sexual and verbal) in addition to covariates. Moreover, as frequency of physical IPV increased, so did the odds of being at risk for depressive symptoms. Those who had experienced physical IPV "sometimes" in the past year were significantly more likely (AOR 1.46, 95% CI: 1.12, 1.90) than those who had never experienced physical IPV to display risk for depressive symptoms, with odds significantly greater for those who experienced physical IPV "often (AOR 3.56, 95% CI: 2.3, 5.56). These findings were further supported with generalized linear modeling, which indicated nearly a 4 point increase (3.66, 95% CI 2.34, 4.98) on the EPDS-B on average for women who had "often" experienced physical IPV in the past year ($p<0.000$) (Table 21).

The odds of being at risk for depressive symptoms increased with each additional type of physical act (slapped, pushed, kicked, punched, twisted, choked, or threatened with a weapon), but small sample sizes (differentiating groups) resulted in large confidence intervals during stratification (Table 19). For example, women experiencing 4 or more types of physical violence had greater odds of being at risk for depressive symptoms than those who had experienced only one or two types ($p<0.000$), but

stratification between each additional type only revealed a positive trend and could not assess clear significant differences. A GLM model adjusting for covariates indicated an average increase of nearly one point (0.74, 95% CI: 0.51, 0.98) on the EPDS-B for each additional type of physical abuse experienced in the past year ($p<0.000$). Severity of the type of physical acts experienced, differentiating having been slapped or pushed in comparison to other more severe forms of physical IPV, was also significantly associated with depressive symptoms ($p<0.000$) (Table 22).

Sexual IPV

Women who had ever experienced forced sex during their marriage had higher odds of being at risk for depressive symptoms (EPDS-B 10+) than those who did not (AOR 1.49, 95% CI: 1.14, 1.94), and the association remained significant after further adjustment for both physical and verbal abuses (AOR 1.35, 95% CI: 1.03, 1.78). While odds of being at risk for depressive symptoms were greater for women who experienced sexual IPV in the past year than those who did not, there were no significant differences between substrata ("sometimes" and "often") (Table 19).

Verbal Attacks

Women called names, sworn at, or had their character attacked by husbands were nearly 3 times more likely to be at risk for depressive symptoms (AOR 2.82, 95% CI: 2.37, 3.36), even after adjusting for other forms of IPV (AOR 2.68, 95% CI: 2.25, 3.21). Additionally, there was a significant positive relationship between experiencing verbal attacks and depressive symptoms ($p<0.000$). After adjusting for physical and sexual IPV exposure and other covariates, women most exposed to verbal attacks by their spouse were still almost 12 times more likely to be at risk for depressive symptoms than those

who did not experience verbal attacks (AOR 11.72, 95% CI: 5.34, 25.72) (Table 19).

Table 19: Odds Ratios for scoring 10 or more on the Edinburgh Postnatal Depression Scale (EPDS-B) by IPV exposure

IPV Exposure	Number	%	Crude OR EPDS 10+	(95% CI)	P>z	Adjusted OR EPDS 10+	(95% CI)	P>z	Adjusted OR for IPV Exposures	(95% CI)	P>z
Physical Violence											
Never (Reference)	2,926	73.8%	1.00			1.00			1.00		
Ever During Marriage	1,040	26.2%	1.27	(1.08, 1.49)	**0.004**	1.14	(0.96, 1.35)	0.130	0.86	(0.71, 1.03)	0.102
Past Year	402	10.1%	2.09	(1.60, 2.60)	**0.000**	1.91	(1.52, 2.39)	**0.000**	1.4	(1.10, 1.78)	**0.006**
Sometimes	304	7.7%	1.61	(1.25, 2.07)	**0.000**	1.46	(1.12, 1.90)	**0.005**	1.06	(0.80, 1.40)	0.693
Often	98	2.5%	4.18	(2.73, 6.42)	**0.000**	3.56	(2.3, 5.56)	**0.000**	2.14	(1.34, 3.43)	**0.001**
Sexual Violence											
Never (Reference)	3,680	92.8%	1.00			1.00					
Ever During Marriage	286	7.2%	1.56	(1.20, 2.02)	**0.001**	1.49	(1.14, 1.94)	**0.003**	1.35	(1.03, 1.78)	**0.030**
Past Year	183	4.6%	1.48	(1.08, 2.02)	**0.015**	1.36	(0.98, 1.87)	0.064	1.21	(0.87, 1.69)	0.252
Sometimes	140	3.5%	1.61	(1.12, 2.30)	**0.018**	1.50	(1.04, 2.16)	**0.029**	1.32	(0.94, 1.93)	0.136
Often	43	1.1%	1.23	(0.65, 2.33)	0.531	1.09	(0.57, 2.11)	0.791	1.00	(0.51, 1.96)	1.000
Verbal Attacks											
Very Unlikely (Reference)	2,881	72.6%	1.00			1.00					
Other	1,085	27.4%	2.95	(2.49, 3.49)	**0.000**	2.82	(2.37, 3.36)	**0.000**	2.68	(2.25, 3.21)	**0.000**
Unlikely	491	12.4%	1.71	(1.37, 2.15)	**0.000**	1.59	(1.26, 2.01)	**0.000**	1.53	(1.21, 1.94)	**0.000**
Somewhat Unlikely	449	11.3%	3.41	(2.72, 4.28)	**0.000**	3.26	(2.58, 4.11)	**0.000**	3.12	(2.47, 3.96)	**0.000**
Likely	115	2.9%	10.47	(6.81, 16.11)	**0.000**	11.56	(7.44, 17.93)	**0.000**	10.9	(7.00, 16.98)	**0.000**
Very Likely	30	0.8%	13.94	(5.80, 33.47)	**0.000**	12.95	(5.32, 31.54)	**0.000**	11.72	(4.82, 28.51)	**0.000**
Physical, Sexual or Verbal (Past Year)											
No (Reference)	2,618	66.0%	1.00			1.00					
Yes (Any Type)	1,348	34.0%	2.61	(2.24, 3.02)	**0.000**	2.47	(2.11, 2.89)	**0.000**			
1 Type	1,065	26.8%	2.45	(2.08, 2.88)	**0.000**	2.34	(1.98, 2.77)	**0.000**			
2 Types	244	6.2%	3.17	(2.39, 4.20)	**0.000**	2.95	(2.20, 3.97)	**0.000**			
3 Types	39	1.0%	4.76	(2.47, 9.18)	**0.000**	4.89	(2.46, 9.73)	**0.000**			

Note: Crude OR: Adjusted for clusters; Adjusted OR EPDS 10+: Adjusted for age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, and NGO involvement; Adjusted OR for IPV Exposures: Adjusted for other IPV (verbal, physical, sexual) in the past year in addition to age, education, wealth, religion, husband's education, members in household, father's abuse of mother, and NGO involvement.

Table 20: Odds Ratios for scoring 13 or more on the Edinburgh Postnatal Depression Scale (EPDS-B) by IPV exposure

IPV Exposure	Number	%	Crude OR EPDS 13+	(95% CI)	P>z	Adjusted OR EPDS 13+	(95% CI)	P>z	Adjusted OR for IPV Exposures	(95% CI)	(95% CI)
Physical Violence											
Never (Reference)	2,926	73.8%	1.00			1.00			1.00		
Ever During Marriage	1,040	26.2%	1.33	(1.07, 1.66)	**0.009**	1.16	(0.92, 1.46)	0.210	0.82	(0.64, 1.06)	0.127
Past Year	402	10.1%	2.42	(1.86, 3.14)	**0.000**	2.08	(1.58, 2.74)	**0.000**	1.47	(1.10, 1.97)	**0.010**
Sometimes	304	7.7%	1.55	(1.12, 2.16)	**0.008**	1.33	(0.94, 1.87)	0.104	0.93	(0.65, 1.34)	0.713
Often	98	2.5%	5.52	(3.61, 8.43)	**0.000**	4.51	(2.89, 7.03)	**0.000**	2.52	(1.56, 4.05)	**0.000**
Sexual Violence											
Never (Ref.)	3,680	92.8%	1.00			1.00					
Ever During Marriage	286	7.20%	1.53	(1.10, 2.14)	**0.012**	1.41	(0.99, 1.99)	0.051	1.27	(0.89, 1.80)	0.191
Past Year	183	4.60%	1.78	(1.21, 2.61)	**0.003**	1.58	(1.06, 2.34)	**0.024**	1.41	(0.94, 2.12)	0.100
Sometimes	140	3.53%	1.80	(1.16, 2.77))	**0.018**	1.59	(1.02, 2.50)	**0.040**	1.42	(0.89, 2.24)	0.139
Often	43	1.08%	1.75	(0.82, 3.72)	0.146	1.54	(0.71, 3.34)	0.274	1.39	(0.63, 3.06)	0.412
Verbal Attacks											
Very Unlikely (Reference)	2,881	72.6%	1.00			1.00			1.00		
Other	1,085	27.4%	3.34	(2.68, 4.16)	**0.000**	3.09	(2.46, 3.86)	**0.000**	2.89	(2.29, 3.64)	**0.000**
Unlikely	491	12.4%	2.11	(1.56, 2.86)	**0.000**	1.91	(1.40, 2.59)	**0.000**	1.83	(1.34, 2.50)	**0.000**
Somewhat Unlikely	449	11.3%	3.28	(2.46, 4.37)	**0.000**	2.99	(2.23, 4.02)	**0.000**	2.83	(2.09, 3.82)	**0.000**
Likely	115	2.9%	8.87	(5.81,13.52)	**0.000**	9.33	(6.05, 14.36)	**0.000**	8.63	(5.57, 13.37)	**0.000**
Very Likely	30	0.8%	14.58	(6.77, 31.24)	**0.000**	12.79	(5.86, 27.90)	**0.000**	11.72	(5.34, 25.72)	**0.000**
Physical, Sexual or Verbal (Past Year)											
No (Reference)	2,618	66.0%	1.00			1.00					
Yes (Any Type)	1,348	34.0%	3.05	(2.50, 3.72)	**0.000**	2.78	(2.26, 3.41)	**0.000**			
1 Type	1,065	26.8%	2.79	(2.25, 3.46)	**0.000**	2.59	(2.08, 3.22)	**0.000**			
2 Types	244	6.2%	3.90	(2.78, 5.46)	**0.000**	3.43	(2.42, 4.88)	**0.000**			
3 Types	39	1.0%	6.31	(3.07, 12.95)	**0.000**	5.86	(2.74, 12.53)	**0.000**			

Note: Crude OR: Adjusted for clusters; Adjusted OR EPDS 13+: Adjusted for age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, and NGO involvement; Adjusted OR for IPV Exposures: Adjusted for other IPV (verbal, physical, sexual) in the past year in addition to age, education, wealth, religion, husband's education, members in household, father's abuse of mother, and NGO involvement.

Table 21: Associations of IPV exposure and Edinburgh Postnatal Depression Scale (EPDS-B) scores

IPV Exposure	Number	Unadjusted EPDS Score	(95% CI)	Crude GLM	(95% CI)	P>z	Adjusted GLM	(95% CI)	P>z	Adjusted for IPV	(95% CI)
Physical Violence											
Never	2,926	7.1	(6.9, 7.3)	Ref.			Ref.			Ref.	
Ever During Marriage	1,040	8	(7.2, 7.8)	0.4	(0.06, 0.73)	**0.020**	0.13	(-0.34, 0.59)	0.587	-0.49	(-1.22, 0.23)
Past Year	402	9.0	(8.4, 9.5)	1.96	(1.30, 2.62)	**0.000**	1.67	(1.18, 2.17)	**0.000**	1.08	(0.23, 1.92)
Sometimes	304	8.2	(7.6, 8.7))	1.09	(0.31, 1.87)	**0.006**	0.81	(0.05, 1.58)	**0.037**	0.15	(-1.06, 1.36)
Often	98	11.4	(10.2, 12.5)	4.28	(3.11, 5.46)	**0.000**	3.66	(2.34, 4.98)	**0.000**	2.63	(1.46, 3.79)
Sexual Violence											
Never (Ref.)	3,680	7.1	(7.0, 7.3)	Ref.			Ref.			Ref.	
Ever During Marriage	286	8.1	(7.5, 8.6)	1.00	(-0.22, 2.21)	0.109	0.87	(-0.43, 2.16)	0.190	0.73	(-0.43, 1.89)
Past Year	183	8.3	(7.5, 9.2)	1.20	(-0.37, 2.78)	0.135	0.97	(-0.77, 2.71)	0.275	0.81	(-0.87, 2.48)
Sometimes	140	8.6	(7.6, 9.6)	1.42	(-0.40, 3.24)	0.126	1.23	(-.085, 3.30)	0.248	1.04	(-0.85, 2.93)
Often	43	7.7	(6.0, 9.3)	0.55	(-1.29, 2.39)	0.559	0.24	(-1.18, 1.66)	0.739	0.14	(-1.56, 1.83)
Verbal Attacks											
Very Unlikely (Ref.)	2,881	6.7	(6.5, 6.9)	Ref.			Ref.			Ref.	
Other	1,085	8.5	(8.2, 8.8)	1.84	(0.51, 3.17)	**0.007**	1.64	(0.30, 2.98)	**0.016**	1.48	(0.02, 2.94)
Unlikely	491	7.4	(7.0, 7.8)	0.68	(-0.52, 1.87)	0.266	0.49	(-0.62, 1.58)	0.388	0.40	(-0.76, 1.56)
Somewhat Unlikely	449	8.8	(8.4, 9.3)	2.13	(1.01, 3.27)	**0.000**	1.89	(0.75, 3.03)	**0.001**	1.74	(0.49, 3.00)
Likely	115	11.0	(10.2, 11.8)	4.31	(3.18, 5.42)	**0.000**	4.31	(3.09, 5.53)	**0.000**	4.10	(2.58, 5.61)
Very Likely	30	13.7	(11.4, 16.0)	6.97	(3.70, 10.25)	**0.000**	6.49	(2.96, 10.02)	**0.000**	6.24	(2.69, 9.78)
Physical, Sexual or Verbal (Past Year)											
No (Ref)	2,618	6.6	(6.4, 6.7)	Ref.			Ref.				
Yes (Any Type)	1,348	8.4	(8.1, 8.7)	1.83	(0.71, 2.95)	**0.001**	1.62	(0.47, 2.76	**0.006**		
1 Type	1,065	8.1	(7.8, 8.4)	1.56	(0.26, 2.86)	**0.019**	1.39	(0.08, 2.69)	**0.037**		
2 Types	244	9.3	(8.6, 10.0)	2.75	(1.83, 3.67)	**0.000**	2.48	(1.71, 3.26)	**0.000**		
3 Types	39	10.1	(8.3, 11.8)	3.48	(0.87, 6.08)	**0.009**	3.24	(0.60, 5.87)	**0.016**		

Note: Crude GLM: GLM coefficient adjusted for clustering; Adjusted GLM: GLM coefficient adjusted for age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, NGO involvement and clustering; Adjusted for IPV: GLM coefficient adjusted for other IPV (verbal, physical, sexual) in the past year in addition to age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, NGO involvement, and clustering

Table 22: Associations of IPV severity and Edinburgh Postnatal Depression Scale (EPDS-B) scores

IPV Exposure in Past 12 Months	Number	Percent	Crude EPDS	(95% CI)	Crude GLM	(95% CI)	P>z	Adjusted GLM	(95% CI)	P>z	Adjusted OR 10+	(95% CI)	P>z
Physical Violence Types													
None	3,564	89.9%	7.0	(6.9, 7.1)	Ref.			Ref.			Ref.		
One Type	132	3.3%	7	(6.3, 7.8)	0.05	(-0.56, 0.64)	0.879	-0.20	(-0.70, 0.30)		0.97	(0.65, 1.44)	0.881
Two Types	92	2.3%	8.8	(7.8, 9.8)	1.83	(0.60, 3.07)	**0.004**	1.51	(0.39, 2.64)	**0.008**	1.55	(0.99, 2.42)	0.055
Three Types	77	1.9%	9.8	(8.5, 11.1)	2.81	(1.24, 4.38)	**0.000**	2.70	(1.35, 4.07)	**0.000**	2.51	(1.55, 4.07)	**0.000**
Four Types	64	1.6%	10.8	(9.5, 12.2)	3.86	(2.77, 4.94)	**0.000**	3.26	(2.38, 4.14)	**0.000**	3.33	(1.95, 5.71)	**0.000**
Five or More Types	37	0.9%	11.1	(9.1, 13.0))	4.06	(1.30, 6.81)	**0.004**	3.84	(0.93, 6.76)	**0.010**	6.89	(3.28, 14.46)	**0.000**
Physical Violence Severity													
None (Ref.)	3,564	89.9%	7.0	(6.9, 7.1)	Ref.			Ref.			Ref.		
Moderate (Push or Slap)	157	4.0%	7.4	(6.7, 8.2)	0.44	(-0.52, 1.40)	0.367	0.13	(-0.69, 0.97)	0.748	1.02	(0.71, 1.46)	0.927
Severe (Punch, Kick, Twist, Choke, Weapon)	245	6.1%	9.9	(9.2, 10.6)	2.94	(1.91, 3.96)	**0.000**	2.67	(1.77, 3.56)	**0.000**	2.81	(2.11, 3.73)	**0.000**

Note: Crude GLM: GLM coefficient adjusted for clusters; Adjusted GLM: GLM coefficient adjusted for age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, and NGO involvement; Adjusted OR 10+: OR adjusted for age, education, wealth, religion, husband's education, number of persons in house, father's abuse of mother, and NGO involvement; *Additional Note:* If an individual experienced any form of "severe violence," they were excluded from the "moderate violence" group

DISCUSSION

Studies concerning depressive symptoms among women are lacking in more than 80% of the world's 112 low- and lower-middle-income countries and in 90% of the least-developed countries (Fisher et al., 2012). Our study provides a unique advantage of including women across all phases of the reproductive years in a rural resource-poor setting, but with high coverage and representation. In developing counties, studies often center on recruiting women from urban tertiary teaching hospitals or health centers inaccessible to a large percentage of the population (Fisher et al., 2012). This study gauges the local prevalence of being at risk for depressive symptoms and high comorbidity with physical, sexual, and verbal IPV exposures.

Depressive Symptoms

We found being at risk for depressive symptoms (EPDS-B score of 10 or higher) to be highly prevalent (31%) among married women of reproductive age in our study, which is markedly higher than other international studies in lower income countries. In a systematic review of prevalence and determinants of perinatal mental disorders in women in low- and lower-middle income countries, mean prevalence was 15.6% among pregnant women and 19.8% among postnatal women (Fisher et al., 2012). Our findings were more comparable with two recent studies in rural Bangladesh. In rural Mymensingh (northern Bangladesh), 32% of women exhibited depressive symptoms 6-8 months postpartum with use of a cutoff of 9/10 on the EPDS-B (Kabir et al., 2014). Gausia and colleagues completed a study in Matlab, a rural area southwest of Dhaka, Bangladesh using the validated EPDS-B with a 9/10 cutoff and also found a point prevalence of 33% at 34-35 weeks pregnancy, but a lower prevalence of 22% at 6-8 weeks postpartum (Gausia et al.,

2009). Interestingly, prevalence of being at risk for depressive symptoms using the EPDS-B with a cutoff of 9/10 for women in our study revealed fairly consistent results across obstetric status, with 31% prevalence among those who were neither pregnant nor less than a year postpartum, 30% among pregnant women, 33% in those less than 6 months postpartum, and 30%. No significant differences were found among subgroups after adjusting for covariates.

We propose a few reasons for high prevalence of being at risk for depressive symptoms and low variation across obstetric subgroups. The Bangladeshi population in which the EPDS-B was validated was primarily urban, 89% literate (compared to the 41% national average and even lower rural averages), and the author suggests that the 9% prevalence found during the validation study would most likely be an underestimate of depression in the general population (Gausia et al., 2007). Moreover, depression and anxiety have been found to be highly comorbid, with almost 60% of individuals with major depression also meeting criteria for an anxiety disorder. The Edinburgh Postnatal Depression Scale (EPDS) detects, but does not distinguish between symptoms of anxiety and depression (Cox et al., 1987). In light of this, EPDS screening for "depressive symptoms" should not be used to determine "depression" in a general population, but rather as a measure of general mental wellbeing (Kessler et al., 2003). The EPDS-B may be sensitive to stressors of difficult everyday life for women in rural Bangladesh, overshadowing any of the abnormal stressors and hormonal changes associated with depressive symptoms characteristic of the perinatal period. This phenomenon was evident in a systematic review of higher income countries, which found life stressors, particularly in the past year, to be associated with higher EPDS scale scores during the

antepartum period (Lancaster et al., 2010). Studies that have used clinical psychiatric interviews for the diagnosis of depression have reported lower prevalence than studies using screening scales, which tend to overestimate the true prevalence (Halbreich & Karkun, 2006). Additionally, prevalence can be influenced by the instrument or method used to determine depressive symptoms, such as use of non-local terms and an etic approach to gather local prevalence (Ragram, Weis, Keyal, & Channabayanna, 2001; Selim, 2010). For example, use of the CESD (Center for Epidemiologic Studies – Depression Scale) with a clinical cut point of 16 (not validated for Bangladesh) in rural Matlab yielded results as high as 53% prevalence at 6 months postpartum and 52% at 12 months postpartum (Black et al., 2007).

IPV and Depressive Symptoms

Though our study is cross-sectional and cannot assess causality, application of the Bradford-Hill criteria to our findings demonstrates strong plausibility of a relationship between IPV exposure and depressive symptoms among women in rural Bangladesh (Hill, 1965). In respect to strength of association, physical, sexual, and verbal abuses were each independently associated with greater odds of being at risk for depressive symptoms than among women who had not been exposed. Regarding temporality, women who had experienced physical IPV while married were more likely to be at risk for depressive symptoms than those who had not experienced IPV, and those who had experienced physical IPV most recently (in the past year) had the highest odds of being at risk for depressive symptoms. However, temporality associations were not significant for sexual IPV nor could a temporal element be assessed for verbal attacks. Additionally, dose-response relationships were noted for both physical IPV and verbal attacks.

The relationship between depressive symptoms and physical IPV obtained in our study was in accord with other studies in lower-income countries, such as have been reported in the WHO Multi-country study on domestic violence and women's health (Krug EG et al., 2002). Similarly, a systematic review of studies examining physical violence and post-natal depression in low- and lower-middle income countries found the odds ratio of women who experienced physical IPV to be 2.11 (95% CI: 1.1–4.0) and as high as 6.75, (95% CI: 2.1–2.0) (Fisher et al., 2012; Fisher et al., 2010; Gausia et al., 2007). Our finding that the odds of being at risk for depressive symptoms were nearly two-fold for women who had been abused physically in the past year and approximately four-fold if they had been beaten often, were similar to the few studies that were conducted in rural Bangladesh. Gausia and colleagues found that women who were beaten prior to and during pregnancy had more than two times the odds (AOR 2.4, 95% CI: 1.4 – 4.1) of experiencing depressive symptoms (EPDST 10+) as those who hadn't in rural Matlab Bangladesh (K. Gausia et al., 2009). In rural Mymensingh, Bangladesh, having experienced physical IPV was found to be a significant predictor of maternal depressive symptoms among women 6-8 months after birth (OR: 2.83, 95% CI: 1.72-4.64), but was not associated with forced sex or emotional violence (Kabir et al., 2014).

In our study, 7.2% of women had experienced forced sex during their marriage. These women were 56% more likely to be at risk for depressive symptoms. However, we did not detect significantly higher odds of risk for depressive symptoms among women who had experienced sexual IPV more recently or more frequently. Dutton and Goodman have suggested that if IPV has ever occurred in a relationship, only subtle or provoked reminders of past experiences by a perpetrator are needed in order to coerce,

force and intimidate (Dutton & Goodman, 2005; Dutton, Kaltman, Goodman, Weinfurt, & Vankos, 2005). For example, if a woman has already experienced rape within marriage, her husband could indicate he wants sex and intimate that if he doesn't get what he wants, forced sex remains a possibility. In that sort of context, present unwanted sex may not be necessarily interpreted as "forced sex," but in reality, there is little choice. As a result, similar depressive symptom scores might be found among women who had ever experienced sexual IPV, regardless of how long ago or frequency. Alternatively, lack of differentiation in depressive symptoms between sexual IPV frequency subgroups could have resulted due to small sample sizes (large confidence intervals). In other rural areas of Bangladesh, the percentage of women reported to have experienced sexual IPV in the past year has been as high as 65% (Kabir et al., 2014). We postulate a few possible reasons for a much lower prevalence of sexual IPV. First, the concept of forced sex within marriage could be a vague concept, often misunderstood, or perceived as taboo and thereby not reported as having occurred by women in our study. Similarly, our survey contained only one question pertaining to sexual IPV (whether or not they experienced forced sexual intercourse), and perhaps a broader definition of sexual violence with more specific details using local terminology would have increased the sensitivity of our survey tool. Prevalence of having experienced sexual IPV in the past year varied by union, from as low as 0.6% to as high as 12.9%, suggesting that there may truly be large variation from community to community and even greater disparities across states.

Women who reported husbands calling them names, swearing at them, or attacking their character were approximately three times more likely to be at risk for

depressive symptoms than those who did not, independent of sexual or physical violence ($p<0.000$). Participants who reported the greatest likelihood (likely or very likely) of verbal abuses by their husband (n=145) were an astonishing 12 times more likely to be at risk for depressive symptoms. Our study coincides with research indicating that exposure to and frequency of psychological aggression and verbal abuse is strongly associated with depressive symptoms (Kabir et al., 2014; Martin et al., 2006; Shapero et al., 2014; Sorbo, Grimstad, Bjorngaard, Lukasse, & Schei, 2014). While a little more than half of those who experienced physical abuse had also been exposed to some measure of verbal abuse, the two forms were often independent and each were independently associated with greater odds of being at risk for depressive symptoms. That said, should interventions be designed for persons at risk for IPV or depressive symptoms, our study suggests that verbal abuse should be regarded with the same seriousness as physical or sexual IPV.

Our study found that women who had been exposed to any form of IPV recently were more than twice as likely (AOR 2.47, 95% CI: 2.11, 2.89) to be at risk for depressive symptoms and nearly five times as likely (AOR 4.89, 95% CI: 2.46, 9.73) for women exposed to all three forms (physical, sexual, verbal) of abuses examined. Similar increases in odds of being at risk for depressive symptoms among women who had experienced multiple forms of IPV has been noted elsewhere (Ludermir, Lewis, Valongueiro, de Araujo, & Araya, 2010; Rees et al., 2011). Moreover, our study is in correspondence with research suggesting that more severe physical violence increases odds of being at risk for depressive symptoms (Deyessa et al., 2009).

Limitations

Due to the cross-sectional design of our study, neither a causal nor temporal ordering of the associations can be inferred. Devries and colleagues (2013) found there to be a dose-response relationship between abuse and depressive symptoms, but also that the relationship between domestic violence and depression can be bidirectional (Devries et al., 2013). We do not know whether depressive symptoms may have preceded IPV exposures or possibly made women more susceptible to IPV. However, from a practice viewpoint, the policy and intervention implications are similar regardless – both IPV and depressive symptoms are highly prevalent and should be addressed. Focus given to one issue with disregard of the other will most likely have limited effect. Though the EPDS-B was validated for postpartum women in a more urban context with higher rates of women's literacy than our study and findings are not to be equated with the psychiatric diagnosis of depression, given the aforementioned evidence, we feel the EPDS-B served as a valid proxy for measuring depressive symptoms. Our study does not provide the full context in which IPV occurs nor many characteristics of the husband, but only sheds light on the specific acts that a woman had been exposed to. Moreover, it was not asked if husbands were present or abroad recently. Sylhet is known for high rates of migration of males for work and unpublished data from the study population suggests that approximately 30% of men work outside of their local community, thus limiting interaction with wives, and subsequent possibility of recent physical or sexual IPV. The risk of recall bias could also have influenced our findings, especially regarding the sensitivity regarding the topics of IPV and depressive symptoms. Lastly, it is always possible confounders have clouded the association between IPV and depressive

symptoms, such as a poor relationship with a mother-in-law, which we did not assess (Gausia et al., 2009).

Conclusion

IPV and depression are both under recognized and often poorly defined in local terms, under-diagnosed and seldom screened for, and under-treated due to stigmatization, fear, or provision of resources. IPV and depression share many of the same cultural and risk factors, such as low education and other environmental stressors, thus resulting in high comorbidity (Cheng, 2012). Fortunately, depressive symptoms are often responsive to treatment, whether pharmacological, psychological, or psychosocial in nature, and can be conducted successfully in lower income countries (Dennis, Ross, & Grigoriadis, 2007; Gavin et al., 2005; Gaynes et al., 2005; Goodman, Smyth, Borges, & Singer, 2009; Miller & LaRusso, 2011; Rahman et al., 2013; Yonkers et al., 2001). However, mental health workers in Bangladesh are sparse and health-care infrastructure in the country is limited and the need for IPV and depression prevention and treatment remains high (WHO, 2006). While development of cost-effective interventions at the community-level is needed, model programs have already proven successful in similar settings (Dennis, 2005; Rahman et al., 2013). Locally trained persons in our study were able to conduct screenings and local women were willing to share their experiences. The perinatal period is an opportune time for IPV and/or depression screenings given the comparatively higher contact time between women, their families, and health providers and could be used as a possible avenue for the introduction of preventative information and available resources (Chandran, Tharyan, Muliyil, & Abraham, 2002; Patel, Rodrigues, & DeSouza, 2002). Our study further reveals that IPV and being at risk for depressive symptoms are not only

highly prevalent during the perinatal period, but across the entire reproductive age for rural women of Bangladesh. Community-based intervention proposals, such as women's support groups, need not only include women who are pregnant or postpartum. Perhaps creating support groups for at-risk women across the entire reproductive span would be beneficial, more convenient geographically, and even more effective in reducing the dire consequences of IPV and depression on women, their families, and communities.

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Chapter 5 (Study 3): The validity of the "situational couple violence" and "intimate terrorism" IPV typology in rural Bangladesh

ABSTRACT*

Objective: To explore the validity of "situational couple violence" and "intimate terrorism" IPV typology in rural Bangladesh.

Design: This cross-sectional study uses data from a household survey conducted in 2014 of 3,966 married women in the rural Sylhet district of Bangladesh. The parent study, known as the Healthy Fertility Study, is described elsewhere (Ahmed et al., 2015; Ahmed et al., 2013). Cluster analysis of 402 marriages, in which a woman experienced physical violence by her husband in the past year, was performed. Relationship characteristics, including communication, control, commitment, trust, satisfaction and abuse patterns, were used as input variables for K-means non-hierarchical cluster analysis to partition couples into clusters with similar traits. Cluster solutions and supplementary analysis of communication and controlling patterns were compared with Michael P. Johnson's proposed "situational couple violence" and "intimate terrorism" typology theory (Johnson, 2008).

Results: A two-cluster solution derived from K-means clustering, based on comparison of input variables and external variables (not used during cluster analysis procedures), was compatible with Johnson's proposed typology of "situational couple violence" and "intimate terrorism." Supplementary analysis of communication patterns between all

married couples (n=3,966) and controlling behaviors of husbands, who were physically abusive in the past year (n=402), were also compatible with typology theory.

Conclusion: Study findings offer general support for Johnson's typology theory. Based on Johnson's typology theory, violent relationships in rural Bangladesh are not all alike and treating them as such in intervention efforts could be erroneous, even dangerous. Further research is needed for validation of typology theory in the context of rural Bangladesh.

INTRODUCTION

Intimate partner violence (IPV) is ubiquitous and its prevalence varies between and within countries, ranging between 15 and 71% (Garcia-Moreno et al., 2006; Krug, Mercy, Dahlberg, & Zwi, 2002). While IPV is of great concern globally, it disproportionately affects developing countries (Jayatilleke, Poudel, Yasuoka, Jayatilleke, & Jimba, 2010; Kishor S, 2004). IPV relationships were treated as homogenous, largely explained as a product of patriarchal systems (Holtzworth-Munroe & Stuart, 1994). As characteristics of both perpetrators and victims were scrutinized, it became apparent that relationships with IPV were not best understood as one homogenous group (Caldwell, Swan, & Woodbrown, 2012; Holtzworth-Munroe & Stuart, 1994; Johnson & Leone, 2005; Tweed & Dutton, 1998).

In their seminal work, Holtzworth-Munroe and colleagues examined prior research efforts to develop IPV perpetrator typologies and identified three common themes by which batterers were categorized: severity and frequency of abuse; whether the perpetrator was violent outside of the intimate relationship; and the psychological characteristics of the perpetrator, such as the presence of personality disorders (Grana, Redondo, Munoz-Rivas, & Cantos, 2014; Holtzworth-Munroe & Stuart, 1994). Early advocates for women's empowerment and health were fearful singling out characteristics of female victims or perpetrators of violence would lead to victim-blaming and hinder progress (Friend, Bradley, Thatcher, & Gottman, 2011). Conversely, research exploring the characteristics and complexities of violent relationships has opened the door to more effective IPV prevention and treatment efforts, whereby interventions are tailored to better suit the specific type of relationship in which violence occurs (Bazargan-Hejazi et

al., 2014; Charles, Whitaker, Le, Swah, & DiClamente, 2011; Johnson & Leone, 2005; Melander, Noel, & Tyler, 2010; Renner & Whitney, 2012).

The United States Center for Disease Control broadly categorizes domestic violence into two categories: Unidirectional and bidirectional (CDC, 2003). In industrialized countries, studies suggest men and women use IPV at similar frequencies and bidirectional IPV is common (Archer, 2002; Bazargan-Hejazi et al., 2014; Charles et al., 2011). However, women bear the brunt of the burden of physical injuries and homicides. Supporters of feminist theory proposed IPV manifests when patriarchal systems of control are challenged. Family violence theorists suggested violence was the spilling over of common family conflicts and stressors. Johnson offered his own framework by which each of the aforementioned theories characterizes two different overarching typologies (Johnson & Leone, 2005). "Situational couple violence," otherwise termed as "common couple violence," occurs when either partner is violent, but does not demonstrate a controlling behavior over his or her partner (Johnson & Leone, 2005; Johnson, 2008; Johnson, 2006). Situational couple violence is the most common form of violence and is largely dependent upon family stressors giving rise to arguments that at times escalate into acts of violence. Relationships with situational couple violence are often bidirectional in nature. In contrast, "intimate terrorism," the less common archetype, occurs when a batterer demonstrates patterns of control over a partner. Examples of controlling acts include using economic abuse, coercion and threats, intimidation, emotional abuse, and isolation (Graham-Kevan, Zacarias, & Soares, 2012). Johnson states a large portion of intimate terrorists display traits indicative of persons with personality disorders or persons with excessive emotional dependence upon

their partner (Howe, 2012; Johnson, 2006). While the distinction between "intimate terrorism" and "situational couple violence" is primarily deduced by level of coercive control, Johnson has expounded on additional characteristics common to "intimate terrorism." Victims of intimate terrorism are more apt to suffer from more frequent and severe violence, injury (due to level of violence), worse psychological health, and systematic control by abusers interfering with daily activities. Perpetrators are often narcissistic or harbor a personality disorder, are manipulative, and not trustworthy. In effect, victims tend to want to escape, are less satisfied with the relationship, and more likely to seek help (Johnson & Leone, 2005; Johnson, 2008; Johnson, 2006). Johnson also added "violent resistance" and "mutual violent resistance" to his typology theory, but both are considered to be less prevalent, particularly in population-wide survey samples (Johnson, 2008). Violent resistance is where a victim of a controlling abuser retaliates with violence for his or her own protection and mutual violent resistance is when both partners are violent and controlling (Johnson, 2008).

Studies have highlighted associations between communication and conflict resolution styles in couples and presence of IPV (Bodenmann, Kaiser, Halhlweg, & Fehm-Wolfsdorf, 1998; Olson, 2002; Ridley & Feldman, 2003). Ridley and Feldman have described communication as the gatekeeper to IPV after finding that both men and women in IPV relationships demonstrated more verbal aggression (destructive communication) and less constructive communication patterns (Ridley & Feldman, 2003). Moreover, verbal aggression by either partner has been associated with physical violence by either or both partners, and verbal reasoning was negatively correlated with physical violence (Messinger, Davidson, & Rickert, 2011). Johnson states, "Conflicts

may provide the opportunity for violence; communication patterns are probably the most important determinant of how those conflicts will be addressed" (Johnson, 2008). Whereas verbal aggressions and conflict resolution skills may influence patterns of violence within relationships typified as situational couple violence, it is thought that patterns of violence within relationships typified as intimate terrorism would not be altered by communication styles (Johnson & Leone, 2005; Johnson, 2006).

IPV typology research has largely been conducted in industrialized countries, with very few exploratory studies existing elsewhere (Emery, Wu, & Tsolmon, 2015; Graham-Kevan et al., 2012; Tiwari, Fong, et al., 2015; Tsai, Tomlinson, Comulada, & Rotheram-Borus, 2016). Bangladesh is known to have one of the highest rates of partner violence in the world, yet no studies to date have made efforts to extrapolate the most common typologies derived from research in industrialized countries to the Bangladeshi context (Garcia-Moreno et al., 2006). Typology research has been found to be helpful in explaining IPV within other Asian contexts and may be beneficial in understanding IPV and developing appropriate interventions in rural Bangladesh (Emery et al., 2015; Tiwari, Chan, et al., 2015). For situational couple violence, interventions engaging both partners, such as couple counseling and workshops to improve conflict resolution and communication skills, can be beneficial. In the context of intimate terrorism, engaging both partners may expose IPV victims to further violence from a controlling partner who might become angry about disclosure of private information and retaliate. Rather, risk assessment tools, including an outline for an emergency plan of escape, may help women choose whether and when to leave these particularly dangerous IPV relationships and seek help (Johnson, 2008; Kropp, 2008).

In this study, relationship characteristics of 3,966 married women of reproductive age and their spouses in rural Bangladesh are explored. First, communication patterns of all married couples are investigated to highlight population trends of verbal abuse, directionality of attacks, and association with physical IPV. We hypothesize women in relationships characterized by less constructive communication and more destructive communication would have experienced more severe IPV, more frequent IPV, and be more at risk of depressive symptoms. We expect the majority of verbal abuse to be either mutually occurring or directed from men towards women. Second, the relationship between abusive husbands' controlling behaviors and IPV (frequency and severity) are investigated. In unison with Johnson's theory of "intimate terrorism," we predict women in abusive marriages with a "controlling" husband are more likely to experience severe IPV, frequent IPV, and depressive symptoms. The primary aim of this study is to assess the validity of Johnson's IPV typology theory in rural Bangladesh. Exploratory cluster analysis of relationship characteristics is used to identify and differentiate "intimate terrorism" from "situational couple violence" among physically violent couples. We expect cluster solutions to be closely matched with Johnson's IPV typology theory.

METHODS

Study Design

We analyzed cross-sectional data, taken from a 2014 end-line survey of a community based quasi-experimental clustered trial study of 3,996 married women of reproductive age, known as the Healthy Fertility Study (HFS). The design and findings of HFS was published elsewhere (Ahmed et al., 2015; Ahmed et al., 2013).

Study Setting and Population

In 2007, the Healthy Fertility Study (HFS), a quasi-experimental study, started enrolment in four Unions (the smallest administrative unit with a health center) to test an integrated package of maternal and newborn health (MNH) and family planning in the Sylhet District of northeastern Bangladesh. Four Unions were randomized to receive the integrated package and four Unions were randomized to receive MNH care promotion only (Figure 9). The study cohort was completed with an endline survey in 2014, which is the data examined in this study.

Figure 9: Map of intervention and comparison Unions of the Healthy Fertility Study Area in Sylhet District, Bangladesh

Study Implementation

All pregnant women identified by CHWs (community health workers) in these eight Unions were offered enrolment in the HFS. For consenting women, a baseline survey of socio-demographic information including age, education, wealth, religion, and parity, was administered by CHWs through face-to-face interview in the participant's home. A total sample size of 4,430 postpartum women was recruited to evaluate changes in the primary outcome of healthy birth spacing (24 months or greater between births). Mother's background information, index childbirth and health outcomes, and subsequent family planning practices were followed prospectively. The HFS study cohort was completed with an endline survey in January of 2014, for which 3,966 of the original 4,337 women were available for interview. Behavioral health dimensions including depressive symptoms, communication patterns, intimate partner violence, and relationship characteristics were obtained face-to-face by locally trained interviewers at the respondent's home for the endline survey. The HFS intervention was not analysed in this study and intervention details are described elsewhere (Ahmed et al., 2013).

Assessment of variables

Intimate partner violence

To determine IPV exposure, this study utilized a revised version of the Conflict Tactics Scale that is used to ask respondents if they have experienced specific acts of physical and sexual violence as well as the frequency of each act. The revised scale has been translated into Bangla and was validated in Bangladesh (Garcia-Moreno et al., 2006). While the scale is helpful in ascertaining concrete types and patterns of violence against women, the questions do not capture the context in which the acts occurred.

Questions from the IPV questionnaire are as follows and each is listed as a separate question (for a total of 8): ***Does your husband ever… Push you, shake you, or throw something at you?; Slap you?; Twist your arm or pull your hair?; Punch you with his fist or something that could hurt you?***; ***Kick you, drag you or beat you up?***; ***Try to choke you or burn you on purpose?; Threaten or attack you with a knife, gun, or any other weapon?; Physically force you to have sexual intercourse with him even when you did not want to?*** For each "yes" response to any of the aforementioned questions, women were asked a follow up question regarding the frequency of the violent act: ***If yes, how often did this happen during the last 12 months?*** The following responses were allowed***: Often; Only sometimes; or Not at all.*** For binary analysis, women who experienced any of the physical abuses "often" were categorized into the "often" frequency group. Slapping and pushing were categorized as moderate acts of abuse, whereas all other forms of physical violence assessed (shaking, punching, kicking, beating, choking, and threatened with a weapon) were categorized as severe acts of IPV. Due to high collinearity between frequency of physical abuse and the number of different forms of physical abuse (hit, punched, kicked, etc.) women experienced, an additive composite measure was created where each form of abuse was counted as 1 if experienced "sometimes" and 2 if experienced "often" for a total range of 0-14 among participants. This ordinal composite variable was used for cluster analysis.

Control

Johnson has used multiple approaches to measure controlling behaviors, which is the differentiating factor between "intimate terrorism" and "situational couple violence" (Johnson, 2006, 2008). Drawing from these methods, we created a proxy measure for

control. Pence and Paymar outline eight-dimensions of controlling behaviors with use of a Power and Control Wheel (Pence, 1993). Five of the eight dimensions of control—minimizing, threats, intimidation, emotional abuse, and isolation—were matched with women's perceived reasons as to why they had been abused in the past year. Three dimensions— "using male privilege," "using children," and "using economic abuse"—could not be assessed from our survey. Perceived reasons for abuse reported by women consistent with coercive control included: "I left without permission"; "He suspected infidelity"; "I disobeyed him"; "I suspected infidelity"; "He was envious"; and "I refused sex". Additionally, having been abused "For no reason" was also included as a controlling behavior based upon Herman's research matching random violence and torture as a form of control and breaking down a victim (Herman, 1997). Factor analysis confirmed a natural separation of these "controlling" reasons for violence from other perceived reasons for violence. The seven aforementioned "controlling" reasons for violence were compiled to create an additive composite proxy variable for control with a possible range from 0-7. In line with prior methods utilized for assessing a cutoff point for controlling behaviors, 2 standard deviations above the mean (a score of 3 or more) was determined as indicative of "controlling" for binary analysis (Johnson, 2006; Messinger, Fry, Rickert, Catallozzi, & Davidson, 2014). Among women who experienced physical abuse in the past year, 28 relationships were identified as "controlling" and 374 relationships were considered "non-controlling" using the proxy score. Controlling and non-controlling reasons for abuse and the proxy ordinal scale are included in Table 23.

Table 23: Listing of input variables used for cluster analysis

Self-reported Reasons for Abuse by Husband in the Past Year (n=402)		
Women's Perceived Reasons for Abuse	**n**	**percentage**
Included in Controlling Sum		
Without Reason	262	65.2%
Disobeyed Husband/Elder	86	21.4%
Refused Sex	57	14.2%
Envy or Malice	27	6.7%
Wife Suspects Infidelity	21	5.2%
Went Out Without Permission	5	1.2%
Husband Suspects Infidelity	5	1.2%
Not Included in Controlling Sum		
Financial Crisis	92	22.9%
Neglected House Chores	79	19.7%
Because Husband Unemployed	29	7.2%
Food Crisis	18	4.5%
For Dowry	15	3.7%
Demand of Money From My Family	14	3.5%
Husband's Drug/Alcohol Use	5	1.2%
Other	4	1.0%
Controlling Scale (Sum)		
0	61	15.2%
1	212	52.7%
2	101	25.1%
3	25	6.2%
4	3	0.8%

Communication Patterns

Six items from the Communication Patterns Questionnaire were utilized to assess constructive and destructive communication patterns between women and their husbands. Each item ranged from 1-10, with 1 being "very unlikely" and 10 being "very likely" to occur. Three items were utilized to determine constructive communication and three items were used to determine destructive communication, yielding reliability coefficients of 0.82 and 0.70 respectively (Christensen, 1984). A value greater than 2 on the Likert scale was interpreted as an affirmative answer. For cluster analysis, all three questions pertaining to destructive communication were included for weighting purposes.

Dyadic Satisfaction

Seven questions from the Dyadic Adjustment Scale, each ranging from 1-6, were combined to form a composite score assessing level of satisfaction in marriage (Spanier, 1976; Tzeng, 1993). Higher scores indicate a greater level of unrest, conflict, and dissatisfaction. Lower scores indicate satisfaction and relative tranquility. The scale reliability coefficient was 0.78 with a possible range of 7-42.

Trust

Eight questions, each with a range of 1-7, were adapted from the Dyadic Trust Scale and added together to form a composite subscale measuring trust (Huston, 1980). Scores ranged from 14-56 with higher scores indicating a greater level of trust between partners. The alpha coefficient was 0.67, which is slightly lower than a 0.70 reliability range cutoff followed by some researchers. It was decided to include this sub-scale in cluster analysis for the sake of multidimensionality.

Commitment

Five questions, each with a range of 1-9, were extracted from the Sternberg Triangular Love Scale and added together to develop a relationship commitment subscale (Sternberg, 1997). Total scores ranged from 12-45 with higher scores indicating a greater level of commitment and stability. The alpha coefficient for the five questions was 0.72.

Figure 10: Panel of survey questions of relationship dynamics

Survey Questions Included in Cluster Analysis

Constructive Communication Subscale (range: 3-30)
(1="very unlikely" thru 10="very likely")
We try to discuss the problem
We express our feelings to each other
We suggest possible solutions and compromises

Destructive Communication Subscale (range: 3-30; All 3 included separately: 1-10)
(1="very unlikely" thru 10="very likely")
I call my husband names, swear at him, or attack his character
My husband calls me names, swears at me, or attacks my character
We blame, accuse and criticize each other

Commitment Subscale (range: 5-45)
(1="not at all" thru 9 = "extremely")
I expect my love for my husband to last for the rest of my life
I can't imagine ending my relationship with my husband
I view my relationship with my husband as permanent
I am committed to maintaining my relationship with my husband
I have confidence in the stability of my relationship with my husband

Interpersonal Trust Subscale (range: 7-56)
(1= "strongly agree" thru 7 = "strongly disagree." Items 3,4,7,8 reversed scoring)
My husband is primarily interested in his own welfare
There are times when my husband cannot be trusted
My husband is perfectly honest and truthful with me
I feel I can trust my husband completely
My husband is truly sincere in his promises
I feel that my husband does not show me enough consideration
My husband treats me fairly and justly
I feel that my husband can be counted on to help me

Dyadic Satisfaction (range: 7-42)
(1="Never" and 6="All of the Time")
How often do you discuss or have you considered divorce, separation or termination of your marriage?
How often do you or your husband leave the house in anger after a fight?
How often do you think that things between you and your husband are going well?
Do you confide in your husband?
Do you ever regret that you married?
How often do you and your husband quarrel?
How often do you and your husband get on each other's nerves?

Depressive Symptoms (not included in clustering)

Depressive symptoms were obtained through utilization of the Edinburgh Postnatal Depression Scale – Bangladesh Version (EPDS-B), which includes 10 items, each assessed on a 4-point scale (0-3) with a total range of 0 – 30 and a higher score signifying more depressive symptoms in the past 7 days. Five items assess dysphoric mood, two items assess anxiety, one item each for guilt, ability to cope with life, and suicidal ideation. The EPDS is internationally the most commonly used measure for assessment of postnatal depression and has been utilized across many countries and languages with a 12/13 cutoff, although criterion validation studies have showed different cut-offs to be optimal in detecting major depressive disorder (Boyd, Le, & Somberg, 2005; Cox, Holden, & Sagovsky, 1987). The original EPDS yielded an 86% sensitivity and 78% specificity using 12/13 cutoff in Scotland and similarly high levels of sensitivity and specificity were produced among multiple translated versions using this cutoff (Eberhard-Gran, Eskild, Tambs, Opjordsmoen, & Samuelsen, 2001). The scale (EPDS-B) was validated in Bangladesh with a sensitivity of 89% and specificity of 87% utilizing a 9/10 cutoff (Gausia, Fisher, Algin, & Oosthuizen, 2007). Though this study also includes women outside of the perinatal period, there were no significant differences in the means of depressive symptoms (EPDS-B) between women who were pregnant (n=261), post-natal < 6 months (n=255), postnatal 6-12 months (n=250), or neither pregnant nor postpartum (n=2,678). Similarity in EPDS-B score means irrespective of obstetric status, adjusting for obstetric status in modeling, and prior validation of the EPDS among non-postnatal women, support use of the EPDS-B as a measurement for depressive symptoms in our population (Cox, Chapman, Murray, & Jones, 1996). The scale demonstrates a

relatively good internal reliability with a Cronbach's alpha of 0.77 for the EPDS-B in our study population.

Cluster Analysis Rationale

Differentiation between "intimate terrorism" and "situational couple violence" is assessed by patterns of control and violence by both partners in a relationship (Johnson, 2008). Our study did not include a validated measure for "control." Also, the abbreviated Conflict Tactics Scale assessed only violence by husbands and not by women. Given these limitations, additional characteristics associated with differentiation between "intimate terrorism" and "situational couple violence" were included in a cluster analysis to bolster assessment of typology. Cluster analysis is an empirical procedure of categorizing data into groups, known as clusters, based upon similarity or dissimilarity with other observations. Selection of variables to include in clustering is important, should be done after careful consideration, and with relation to a driving theory. Inclusion of irrelevant input variables can dilute distinction between clusters (Giudici, 2003). Table 24 presents the mean values for the input variables, which were used to determine clusters.

Table 24: Listing of input variables used for cluster analysis

Variables Used to Cluster (range), n = 402	mean	sd
Constructive communication (3-30)	16.8	4.8
Frequency of wife's verbal abuse (1-10)	2.7	1.8
Frequency of husband's verbal abuse (1-10)	3.9	2.2
Frequency of mutual verbal abuse (1-10)	4.1	2.0
Commitment (5-45)	35.5	5.6
Trust (7-56)	12.4	5.3
Satisfaction - dyadic adjustment (7-42)	17.1	5.4
Types and frequency of physical abuse (0-14)	3.1	2.5
"Controlling" reasons for abuse (0-7)	1.2	0.8

Steps to Cluster Analysis

Aldenderfer and Blashfield state the following things should be reported when conducting cluster analysis: the procedure(s) used to determine the number of clusters, the similarity or distance measure, the clustering method, evidence for the validity of the clusters, and the computer program used (Aldenderfer MS, 1984).

Cluster analysis was done in two steps, the first consisting of a hierarchical method to determine the number of clusters and the second consisting of a non-hierarchical method for partitioning the data into clusters (Heir, 1995). Prior to clustering, all 9 input variables (relationship characteristics) were standardized through use of Z-scores. Though treating ordinal values (assessed by Likert scale) as continuous is not optimal, this approach is used often for clustering analysis to mitigate the more undesirable weighting effects of comparing scales with varying ranges (Sandrine Pavoine, 2009). As a result, all input variables have equal influence in the partitioning procedure.

The first step of cluster analysis entailed the use of a hierarchical procedure to determine the optimal number of clusters for partitioning of the data. Ward's clustering method, the only agglomerative method based on sum-of-squares criterion, was used. Observations were merged based on the optimal value of the error sum of squares, creating clusters that minimized within-group dispersion at each fusion (of observations) (Legendre, 2014). Euclidian distance, based on the distance between two points in Euclidean space (a straight line), is the most commonly used distance measure. Ward's agglomerative clustering method with Euclidian distance was used in conjunction with a dendrogram displaying the multivariate distance at which observations have been sub

grouped. In our study, a 2 or 3 cluster solution best fit the data (Figure 12: Ward's Hierarchical Cluster Analysis Dendrogram).

For the second step of cluster analysis, both the two and three clustered solution (derived from Ward's method) were explored using K-means clustering. Cluster centroids acquired in the aforementioned first step (Ward's agglomerative procedure) were used as initial seed points for K-means (non-hierarchical) cluster analysis. The K-means clustering procedure can be reduced to two alternating stages. In the assignment stage, each observation is assigned to the cluster resulting in the least within-cluster sum of squares. The second stage of the K-means procedure involves the recalculation of the cluster means (centroid) after the acquisition of the newest member. This process is repeated until all observations (women) belong to a cluster. To assess reliability, the K-means clustering process was repeated many times using random seed points and alternate variable orders, both of which can effect clustering outcomes. T-tests and ANOVAs were conducted to compare clusters on mean scores and the chi square test was used to compare clusters on categorical variables. All statistical analysis was conducted with the STATA 13 software.

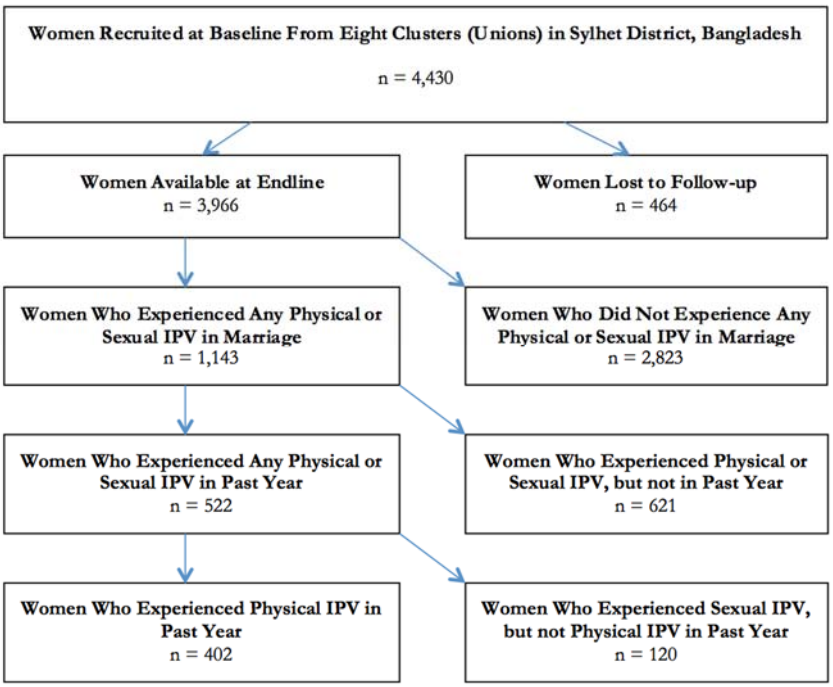
RESULTS

Profile Characteristics

A total of 3,966 women participated in the survey. The mean (SD) age of the women was 32 (5.4) years. 93.4% (n=3,706) were Muslim, while 6.6% (n=260) were of other religions, predominantly Hindu. All women had previously given birth, 22.7% having given birth to one child, 20.6% to two children, 18.9% to three children, and 37.9% to four or more children. At the time of interview, 7.6%

(n=301) were pregnant, 7.3% (n=291) were less than 6 months postpartum, 7.4% (n=294) were 6 months to a year postpartum, and 77.7% (n=3,080) were neither pregnant nor postpartum. The mean (SD) level of education among women was 4.2 (3.6) years, with 34.4% having received no formal education, 32.6% with one to five years of education, and 33.0% with five or more years of schooling. Education levels of spouses varied, with 40.7% having received no formal education, 30.9% with one to five years of education, and 28.4% with more than five years of schooling. Thirteen percent of women (n=522) reported having experienced physical and/or sexual abuse in the past year. Women who experienced forced sex, but reported no physical abuse in the past year (n=120), were not included for cluster analysis. The final number of women included in IPV typology exploration was 10.1% (n=402) of the total number surveyed at endline (Figure 11: Study flow chart).

Figure 11: Study flow chart



Although women were surveyed from 8 Unions in close proximity, the percentage of women having experienced physical IPV in the past year varied by Union. Women from Kajalshar (14.6%) and Kholachora (14.9%) reported the highest prevalence of physical IPV and Dakshin Banigram reported having experienced the least amount of physical IPV in the past year (3.3%) (Table 25).

Table 25: Physical IPV Exposure among participants by Union of Sylhet, Bangladesh

Union	n	Percent	Past Year Physical IPV
Kajalshar	459	11.6%	14.6%
Kholachora	754	19.0%	14.9%
Manikpur	546	13.8%	12.6%
Sultanpur	570	14.4%	8.1%
Dakshin Banigram	450	11.4%	3.3%
Jhingabari	520	13.1%	7.5%
Paschim Dighir P	309	7.8%	11.0%
Purba Dighir Par	358	9.0%	5.6%
Total	3,966	100%	10.1%

Communication Patterns in Marriage and Associations with Physical IPV

Among all women interviewed (n=3,966), 70.9% (n=2,811) indicated neither they nor their husbands used destructive communication (name-calling, swearing, or character attacks) towards their spouse (Table 26). In 15% (n=595) of marriages, both partners used forms of destructive communication with their spouse. The majority of nonreciprocal verbal abuse was directed from husbands towards wives (12.4%) and rarely from wives towards husbands (1.8%).

Table 26: Unidirectional and bidirectional verbal abuse

Verbal Abuse and Physical IPV in Past Year (n=3,966)						
	Physically Violent in Past Year					
	No		Yes		All	
Verbally Attacked Spouse	number	percent	number	percent	number	percent
Neither (Comparison)	2,677	95.2	134	4.8	2,811	70.9
Wife Only	54	77.1	16	22.9	70	1.8
Husband Only	367	74.9	123	25.1	490	12.4
Both	466	78.3	129	21.7	595	15.0

Women in marriages where either one or both partners verbally abused the other reported significantly fivefold the odds ($p<0.000$) of having experienced IPV by their husbands compared to women in marriages where neither partner was verbally abusive (Table 27, Table 28).

Table 27: Verbal attacks and physical IPV (past year)

Odds Ratios of Physical IPV in Past Year (n=3,966)						
Verbally Attacked Spouse	OR	CI	p-value	AOR	CI	p-value
Neither (Comparison)	ref.			ref.		
Wife Only	5.74	(3.17, 10.38)	0.000	5.66	(3.11, 10.30)	0.000
Husband Only	6.36	(4.78, 8.47)	0.000	5.84	(4.37, 7.80)	0.000
Both	5.72	(4.35, 7.53)	0.000	5.39	(4.09, 7.11)	0.000
OR: Wald chi2(3) = 221.07; AOR Adjusted for age, education, religion, wealth, hhsize: Wald chi2(8) = 239.68						

Table 28: Verbal attacks and IPV (ever during marriage)

Odds Ratios of Physical IPV During Marriage (n=3,966)						
Verbally Attacked Spouse	OR	CI	p-value	AOR	CI	p-value
Neither (Comparison)	ref.			ref.		
Wife Only	5.12	(3.11, 8.41)	0.000	5.34	(3.24, 8.88)	0.000
Husband Only	5.56	(4.46, 6.92)	0.000	5.07	(4.05, 6.33)	0.000
Both	3.66	(2.99, 4.48)	0.000	3.43	(2.80, 4.23)	0.000
OR: Wald chi2(3) = 320.90; AOR Adjusted for age, education, religion, wealth, hhsize: Wald chi2(8) = 375.08						

Mean scores (of Likert scale responses ranging from 1-10) for each of the six questions used to assess destructive and constructive communication patterns in relationships were significantly different ($p<0.000$) between women who had experienced

physical IPV in the past year and women who had not (Table 29). Women who experienced physical IPV in the past year reported less constructive communication and more destructive communication than women who had not experienced physical IPV (p<0.000). Differences in destructive communication were much more pronounced than differences in constructive communication of violent and non-violent couples.

Table 29: Constructive and destructive communication patterns

Past Year Physical IPV and Communication Patterns	No Physical Violence		Physical Violence				
	n=3564		n=402		t-test	glm	adj. glm
	mean	CI	mean	CI	p-value	p-value	p-value
Constructive Communication (3 Question Sum)	***17.86***	***(17.68, 18.03)***	***16.84***	***(16.37, 17.31)***	***0.000***	***0.000***	***0.000***
We try to discuss the problem	5.72	(5.64, 5.79)	5.52	(5.33, 5.72)	0.100	0.049	0.119
We express our feelings to each other	5.99	(5.92, 6.06)	5.59	(5.39, 5.78)	0.000	0.000	0.001
We suggest possible solutions and compromises	6.15	(6.09, 6.20)	5.73	(5.55, 5.91)	0.000	0.000	0.001
Destructive Communication (3 Question Sum)	***7.55***	***(7.41, 7.69)***	***10.59***	***(10.13, 11.04)***	***0.000***	***0.000***	***0.000***
We blame, accuse and criticize each other	3.25	(3.18, 3.32)	4.05	(3.86,4.25)	0.000	0.000	0.000
I call my husband names, swear at him, or attack his character	1.99	(1.95, 2.04)	2.65	(2.48, 2.82)	0.000	0.000	0.000
Husband calls me names, swears at me, or attacks my character	2.31	(2.25, 2.36)	3.88	(3.67, 4.10)	0.000	0.000	0.000

Communication Patterns in Marriage and Depressive Symptoms

Women in marriages where neither partner was verbally abusive scored an average of 6.6 on the EPDS-B, well below the cutoff score used to signify being at risk for depressive symptoms (**Table 30**). In comparison, women in marriages where both spouses were verbally abusive scored an average of 3 points higher on the EPDS-B and were 4.5 times (p<0.000; AOR 95% CI: 3.6, 5.5) more likely to be at risk for probable depression (

Table 31). Women in marriages where only the husband was verbally abusive were 1.6 (p<0.000; AOR 95% CI: 1.3, 2.1) times more likely to report being at risk for probable depression than those in the reference group (neither spouse verbally abusive). Lastly, women who were verbally abusive, but their husbands were not, were 3.47

(p<0.000; AOR 95% CI: 2.09, 5.8) times more likely to be at risk for probable depression compared to marriages with no verbal abuse.

Table 30: Verbal attacks and depressive symptoms (GLM)

EPDS Scores and Spouse Communication							
Verbally Attacked Spouse	EPDS Score	GLM Coef.	p-value	95% CI	AGLM Coef.	p-value	95% CI
Neither (Comparison)	6.58						
Wife Only	11.16	4.57	0.000	(2.83, 6.32)	4.51	0.000	(2.93, 6.09)
Husband Only	7.03	0.45	0.256	(-0.32, 1.22)	0.22	0.591	(-0.57, 1.01)
Both	9.77	3.19	0.000	(1.52, 4.86)	3.00	0.001	(1.28, 4.71)
AGLM: Adjusted for age, education, religion, wealth, hhsize							

Table 31: Verbal attacks and depressive symptoms (OR)

Probable Depression (EPDS=10+) and Spouse Communication						
Verbally Attacked Spouse	OR	p-value	95% CI	AOR	p-value	95% CI
Neither (Comparison)	ref.			ref.		
Wife Only	3.48	0.000	(2.12, 5.72)	3.47	0.000	(2.09, 5.76)
Husband Only	1.72	0.000	(1.36, 2.18)	1.63	0.000	(1.29, 2.07)
Both	4.63	0.000	(3.78, 5.67)	4.46	0.000	(3.63, 5.47)
AOR: Adjusted for age, education, religion, wealth, hhsize						

Patterns of Control, Physical IPV, and Depressive Symptoms

Twenty-eight husbands physically abused their spouses in the past year for three or more different reasons deemed to be of a "controlling" nature. Wives of these husbands who were "highly controlling" were more likely to have experienced more frequent and more severe physical IPV than wives whose husbands were physically abusive, but not controlling (Table 32 & Table 33). There was no significant difference for being at risk for probable depression for wives of highly controlling husbands in comparison to wives whose husbands were not highly controlling (Table 34).

Table 32: Control and physical IPV

Physical Abuse Frequency						
	Low		High		All	
Controlling	number	percent	number	percent	number	percent
Low (0-2)	290	77.5	84	22.5	374	93
High (3-4)	14	50.0	14	50.0	28	7
All	304	75.6	98	24.4	402	100
Pearson chi2(1) = 10.7173 Pr = 0.001; Fisher's exact = 0.002						

Table 33: Control and severity of physical IPV

Physical Abuse Severity						
	Low		High		All	
Controlling	number	percent	number	percent	number	percent
Low (0-2)	153	40.9	221	59.1	374	93
High (3-4)	4	14.3	24	85.7	28	7
All	157	39.1	245	60.9	402	100
Pearson chi2(1) = 7.7574 Pr = 0.005; Fisher's exact = 0.005						

Table 34: Control and risk of probable depression

At Risk for Probable Depression						
	EPDS <10		EPDS >9		All	
Controlling	number	percent	number	percent	number	percent
Low (0-2)	206	55.1	168	44.9	374	93
High (3-4)	18	64.3	10	35.7	28	7
All	224	44.28	178	44.2	402	100
Pearson chi2(1) = 0.8947 Pr = 0.344; Fisher's exact = 0.431						

Cluster Analysis of Physically Violent Relationships

Hierarchical clustering indicated either a two or a three-cluster solution best fit the data. In light of this, K-means (non-hierarchical) cluster analysis of relationship characteristics was restricted to a two-cluster and then a three-cluster solution. Results from K-means clustering for both the two and a three-clustered solution are presented.

Table 35: Cluster solution profiles

	Physically Abused		Two Cluster Solution			
	(n=402)		A (n= 288, 71.6%)		B (n=114, 28.4%)	
Variables Used to Cluster (range)	**mean**	**sd**	**mean**	**sd**	**mean**	**sd**
Constructive communication (3-30)	16.8	4.8	18.0	4.5	13.9	4.3
Frequency of wife's verbal abuse (1-10)	2.7	1.8	2.0	1.2	4.2	2.1
Frequency of husband's verbal abuse (1-10)	3.9	2.2	3.2	1.8	5.6	2.3
Frequency of mutual verbal abuse (1-10)	4.1	2.0	3.5	1.8	5.4	1.8
Commitment (5-45)	35.5	5.6	37.1	4.6	31.3	5.8
Trust (7-56)	12.4	5.3	10.6	3.5	16.7	6.5
Satisfaction - dyadic adjustment (7-42)	17.1	5.4	14.8	3.7	22.9	4.9
Types and frequency of physical abuse (0-14)	3.1	2.5	2.5	1.9	4.7	2.9
"Controlling" reasons for abuse (0-7)	1.2	0.8	1.1	0.7	1.5	0.9
	Three Cluster Solution					
	X (n= 212; 52.7%)		Y (n=126, 31.3%)		Z (n=64, 15.9%)	
Variables Used to Cluster (range)	**mean**	**sd**	**mean**	**sd**	**mean**	**sd**
Constructive communication (3-30)	17.2	4.5	18.5	4.5	12.3	3.7
Frequency of wife's verbal abuse (1-10)	1.6	0.7	3.5	1.8	4.4	2.0
Frequency of husband's verbal abuse (1-10)	2.6	1.5	5.6	1.7	4.8	2.4
Frequency of mutual verbal abuse (1-10)	3.2	1.8	4.8	1.8	5.4	1.8
Commitment (5-45)	36.8	4.9	36.8	4.1	28.4	5.1
Trust (7-56)	10.7	3.8	11.3	3.4	19.9	6.3
Satisfaction - dyadic adjustment (7-42)	14.2	3.7	17.6	3.5	25.5	4.2
Types and frequency of physical abuse (0-14)	2.2	1.6	3.7	2.7	5.0	2.8
"Controlling" reasons for abuse (0-7)	0.9	0.6	1.8	0.8	1.2	0.8

Note: Greyed areas signify cluster with the worst score.

Cluster (Typology) Profiles

Imposing a two-cluster solution on data distinguishes a larger (n=288, 72%) "Cluster A" of relationships superior in every measured dimension from a smaller (n=114, 28%) "Cluster B" of comparably unhealthier relationships. Women in Cluster A reported better levels of commitment, trust, and satisfaction with their husband than women in Cluster B. Cluster A relationships are characterized by more frequent

constructive communication and less frequent destructive communication. In contrast, women in Cluster B experience more severe and frequent violence. Additionally, controlling behaviors of husbands are more evident in Cluster B.

With a three-cluster solution, two larger clusters [Cluster X: n = 212 (53%); Cluster Y: n = 126 (31%)] are contrasted with a smaller Cluster Z [n = 64 (16%)]. Women of Cluster Z reported the worst scores in almost every relationship dimension measured, including the lowest levels of commitment, trust, and satisfaction. Women in Cluster Z experience the most severe and frequent violence. Furthermore, relationships of Cluster Z were least likely to use constructive communication. Interestingly, verbal attacks and controlling patterns by husbands were not most pronounced in Cluster Z, but among relationships in Cluster Y [n = 126 (31%)]. Cluster Y women experienced similarly high levels of violence, verbal abuse, and conflict as the smallest group (Cluster Z: 16%). However, levels of commitment, trust, and constructive communication in Cluster Y couples were much better than Cluster Z. The largest group (Cluster X: 53%) was healthiest in every relationship dimension measured.

Distribution of Socio-Demographic Variables Across Group (Cluster) Membership

In the two-cluster approach, analysis revealed no significant differences between clusters for age, parity, education of the participant or her husband, household size, asset group (wealth), NGO membership, history of abuse among parents, or Union (community). This finding was consistent with the three-cluster approach, except for significant differences in Union membership [X2 (14, n=402) = 66.51, P<.01] and family history of IPV [X2 (4, n=402) = 17.56, P<.01] (Table 36).

Table 36: Comparison of clusters on variables of interest

Not Used in Clustering	Two Cluster Solution		Three Cluster Solution		
	A (n= 288, 71.6%)	B (n=114, 28.4%)	X (n= 212; 52.7%)	Y (n=126, 31.3%)	Z (n=64, 15.9%)
Demographic Variables	**Pearson Chi Square**		**Pearson Chi Square**		
Union (Community)	Pearson chi2(7) = 6.2666 Pr = 0.509		Pearson chi2(14) = 66.5144 Pr = 0.000		
Age Group	Pearson chi2(4) = 4.7363 Pr = 0.315		Pearson chi2(8) = 12.8102 Pr = 0.119		
Parity	Pearson chi2(3) = 4.4867 Pr = 0.213		Pearson chi2(6) = 4.2513 Pr = 0.643		
Maternal Education	Pearson chi2(10) = 16.3213 Pr = 0.091		Pearson chi2(20) = 23.8053 Pr = 0.251		
Husband's Education	Pearson chi2(2) = 1.5743 Pr = 0.455		Pearson chi2(4) = 3.2930 Pr = 0.510		
Household Size	Pearson chi2(2) = 1.1101 Pr = 0.574		Pearson chi2(4) = 5.1416 Pr = 0.273		
Asset Group (Wealth)	Pearson chi2(4) = 2.3260 Pr = 0.676		Pearson chi2(8) = 4.6688 Pr = 0.792		
NGO Membership	Pearson chi2(1) = 0.0021 Pr = 0.963		Pearson chi2(2) = 0.3495 Pr = 0.840		
Father Abused Mother	Pearson chi2(2) = 4.8243 Pr = 0.090		Pearson chi2(4) = 17.5586 Pr = 0.002		
Variables of Interest	**Two Cluster Solution**		**Three Cluster Solution**		
EPDS > 9	Pearson chi2(1) = 46.2328 Pr = 0.000		Pearson chi2(2) = 42.1702 Pr = 0.000		
EPDS > 12	Pearson chi2(1) = 56.4270 Pr = 0.000		Pearson chi2(2) = 66.8749 Pr = 0.000		
Suicidal Ideation	Pearson chi2(3) = 23.0560 Pr = 0.000		Pearson chi2(6) = 31.5524 Pr = 0.000		
Asked Someone For Help	Pearson chi2(1) = 43.2939 Pr = 0.000		Pearson chi2(2) = 42.7107 Pr = 0.000		
Satisfaction with Health	Pearson chi2(4) = 27.9160 Pr = 0.000		Pearson chi2(8) = 36.4576 Pr = 0.000		
Satisfaction with Sexual Life	Pearson chi2(4) = 41.9228 Pr = 0.000		Pearson chi2(8) = 59.0224 Pr = 0.000		
Husband Treats Me Justly	Pearson chi2(6) = 93.8962 Pr = 0.000		Pearson chi2(12) = 164.7607 Pr = 0.000		
Feels Safe in Daily Life	Pearson chi2(4) = 26.9971 Pr = 0.000		Pearson chi2(8) = 62.7189 Pr = 0.000		

Evidence of Cluster Validity

To further validate clusters and explore characteristics, we compared 7 external variables: Risk of probable depression [with use of a more sensitive cutoff (EPDS-B>9) and then a more conservative cutoff (EPDS-B>12)], suicidal ideation, satisfaction with health, satisfaction with sexual health, agreement with whether women's husbands treats them fairly, feelings of safety/security, and whether women asked someone for help because of relationship violence. All 7 variables were significantly different between clusters in both the two-cluster and three-cluster solutions at the $p<.001$ level, indicating heterogeneity among physically violent relationships and support for IPV typologies.

DISCUSSION

The first research aim of this study was to inspect the relationship between IPV and communication patterns of married couples. Next, we aimed to explore "controlling" behaviors of women's husbands and associations with IPV and depressive symptoms.

Finally, we used these relationship dynamics (communication patterns and controlling behaviors), along with other relationship input variables, to conduct an exploratory cluster analysis of relationships in which women had been physically abused in the past year. Findings were to be compared with IPV typology research.

The hypothesis of our first research question was confirmed. Destructive communication is used more often and positive communication is used less often in violent relationships. In fact, the odds of experiencing physical IPV (both ever during marriage and in the past year) were approximately five times greater for women in marriages where either one or both partners verbally abused the other compared to women in marriages where neither partner was verbally abusive. As one might expect in a patriarchal society, verbal attacks were either mutually occurring (15%) or from a husband towards a wife (12.4%). Very rarely was verbal abuse unidirectional from wives towards husbands (1.8%). Women reporting heightened depressive symptoms (EPDS-B score of 10 or more) were 4 times more likely to have verbally attacked their husband ($p<0.000$). Research suggests a probable bi-directional causal relationship between IPV and depression and that persons with mental disorders (including depression) report increased odds of domestic violence compared to people without mental disorder (Foa EB, 2000; Trevillion, Howard, et al., 2012; Trevillion, Oram, Feder, & Howard, 2012). Considering depression as a possible risk factor for IPV, depression treatment might also help prevent IPV in addition to healing from the negative effects of IPV (Iverson et al., 2011; Tsai et al., 2016). Our study indicates that administering questions pertaining to communication patterns may be a helpful tool for identifying women most at risk for IPV and referring them to appropriate interventions without having to ask more sensitive

information pertaining to IPV. Furthermore, research findings from our first aim suggest communication and conflict management skill-building might also be an effective tactic for preventing subsequent re-victimization in rural Bangladesh (Cattaneo & Goodman, 2005).

Our hypothesis that women in physically abusive marriages with a "controlling" husband would be more likely to experience severe IPV, frequent IPV, and depressive symptoms was partially supported. Wives of husbands who were controlling, as determined by our proxy measure, were more likely to experience more severe and frequent physical abuse. Contrary to our hypothesis, wives of physically abusive "controlling' husbands were at no greater risk for probable depression than wives of physically abusive "non-controlling" husbands. This finding contradicts research that links controlling behaviors of an abusive intimate partner (intimate terrorism) to more severe psychological suffering of the victim (Leone, Johnson, Cohan, & Lloyd, 2004). However, our findings are in accord with Buriski-McKenzie and colleagues, who explored the mental health effects of intimate terrorism and situational couple violence typologies among Black and Hispanic women, and found controlling behaviors consistent with intimate terrorism were not more predictive of depressive symptoms than was severity and frequency of violence (Bubriski-McKenzie & Jasinski, 2013). It may be that our proxy measurement used for detecting control failed to differentiate between common controlling patterns endemic to patriarchal Bangladesh and those associated with intimate terrorism. Moreover, our proxy measure for control (specified reasons for abuse) could only be used for women who reported violence in the past year and not among the non-violent majority.

The third hypothesis that clusters would be evident and be consistent with Johnson's theory of IPV relationships was mostly supported. A two-step K-means cluster analysis with a priori selection of a two-cluster solution did yield clustering results moderately consistent with the overarching situational couple violence and intimate terrorism typologies proposed by Johnson. A smaller cluster of women with more controlling husbands, likened to intimate terrorism relationships of Johnson's typology theory, was identified. Women in this group experienced more severe and frequent violence, greater odds of probable depression and suicidal ideation, feelings of being unsafe, in addition to lower levels of trust, commitment and relationship satisfaction. Moreover, a larger cluster of women experiencing significantly less frequent and less severe violence was evident and might be reflective of Johnson's proposed common couple violence (or situational couple violence). There were no significant differences in Union membership or history of family violence between the two identified clusters, suggesting Johnson's broad typology division may be helpful for understanding IPV across communities and generalized to rural Bangladesh.

Based on our input variables and methodology for cluster analysis, a three-clustered solution fit the data as well. This approach postulates three separate IPV typologies (profiles) among married couples in which physical violence had taken place in the past year. The largest cluster (Cluster Z) of relationships is characterized by less violence and wives indicate more normative levels of trust, commitment, and satisfaction. Women also report feeling safer and are not as likely to reach out for assistance in these relationships (compared to other women in violent relationships). For the most part, women indicate they are treated fairly. This larger cluster stands in stark contrast to two

smaller clusters (Clusters Y and Z), both characterized by higher levels of violence and verbal abuse. Cluster Y is comprised of women who experience controlling behaviors and frequent verbal attacks by their husbands, but remain trusting and committed to their husbands. The mean score on the EPDS-B of Cluster Y was 8.3 (SD = 4.4), which was very similar to the mean score of women in the largest cluster [7.7 (SD = 4.6)] and below the 9/10 cut-off for being at risk for depressive symptoms. Cluster Z, the smallest of the three groups, is characterized by women who experience the highest level of violence, are dissatisfied in the relationship, exhibit lower levels of trust and commitment with their partner, and are more likely to verbally attack their husbands. Women in this cluster were most at risk for depressive symptoms and reported an astonishingly high mean of 14.5 (SD = 6) on the EPDS-B.

The three-clustered solution derived from our study could also possibly be explained by Johnson's typology theory. In addition to "intimate terrorism" and "situational couple violence," Johnson described two less common IPV relationship types entailing violence by both partners (Johnson, 2008). "Mutual violent resistance" occurs when both partners are violent and controlling. "Violent resistance" occurs when one partner is violent and controlling and one is violent, but not controlling. We used numerous relationship characteristics in cluster analysis to help differentiate relationship type, but did not include women's violent acts towards their husbands. Cultural and personal methods of coping can be divided into active and passive mechanisms, which may be employed based on severity and controllability of the situation and opportunity available (Folkman, 1984; Holahan & Moos, 1990; Yoshihama, 2002). Verbal attacks towards an abusive husband could be interpreted as active coping, also consistent with

"violent resistance." Resistance, whether verbally or physically, may create anxiety, explaining high levels of depressive symptoms and dissatisfaction. Active coping and confrontation can result in being ostracized by family members and community by going against cultural norms and values (Yoshihama, 2002). This, in part, might explain the existence of the smallest cluster type (Cluster Y: 15.9%) in the three-cluster solution, characterized by women who were significantly more verbally abusive of their husbands than abused women in the other two clusters. Furthermore, we cannot eliminate the possibility of physically abused women who may be physically abusive and controlling towards their husbands ("mutual violent resistance"). Extremely high levels of depressive symptoms and low levels of trust and commitment in the smallest cluster might be indicative of the characteristics of a relationship in which the wife is violent and controlling. Hence, existence of a third cluster could be explained by a small number of violent relationships likened to "mutual violent resistance" or "violent resistance."

This study is not without limitations. Firstly, we only interviewed married women who had at least one child. Research suggests that IPV type and characteristics may differ between married and unmarried women and for women who have children with their abusive partner (Brownridge, 2010). Secondly, women in abusive relationships may choose not to disclose information regarding violence out of fear or other reasons, which can thereby influence results and subsequent interpretations. Thirdly, context of and motivation for violence is important for understanding differences between abusive relationships and a mixed-methods approach is optimal to match quantitatively assessed typologies with contextual factors (Messinger et al., 2014). IPV is often perceived as justified by both men and women and qualitative studies are needed

to explore the cultural context of violence and control patterns (Rosen, Stith, Few, Daly, & Tritt, 2005). Moreover, many characteristics of husbands and their perspectives of relationship qualities were not ascertained. Additionally, we did not measure coping styles of women, which may have been helpful in comparing clusters as well as identifying locally appropriate ways in which women process IPV. Lastly, cross-sectional studies are limited and longitudinal studies would greatly contribute to the understanding of the cyclical nature of IPV, communication patters, and depression.

Our study demonstrates that communication patterns are different between marriages with violence and those without violence. Furthermore, we found women in physically abusive relationships with a controlling husband to be at greater risk for more severe and frequent violence than women in abusive relationships whose husbands were not controlling. Although our study did not include a validated measure for control, ample evidence is provided demonstrating that violent relationships in rural Bangladesh are not homogenous. Furthermore, our findings suggest Johnson's typology theory may be applicable to a Bangladeshi context. If so, it may be best to develop interventions and treatments with a more targeted focus, as opposed to a broad on-size-fits-all approach (Melander et al., 2010). Future research is needed to more firmly establish Johnson's typology theory in Bangladesh.

It is probable that IPV and depression are cyclical in nature, possibly detracting from the effectiveness of single-component interventions. Addressing depressive symptoms and communication tactics as a starting point may both alleviate mental suffering and reduce future re-victimization. Combined interventions, such as a broad-based package of services (e.g., case management, crisis services, legal aid, transitional

housing, and childcare support) plus cognitive-behavioral therapy may be effective in interrupting the vicious cycle of IPV and depression (Tsai et al., 2016).

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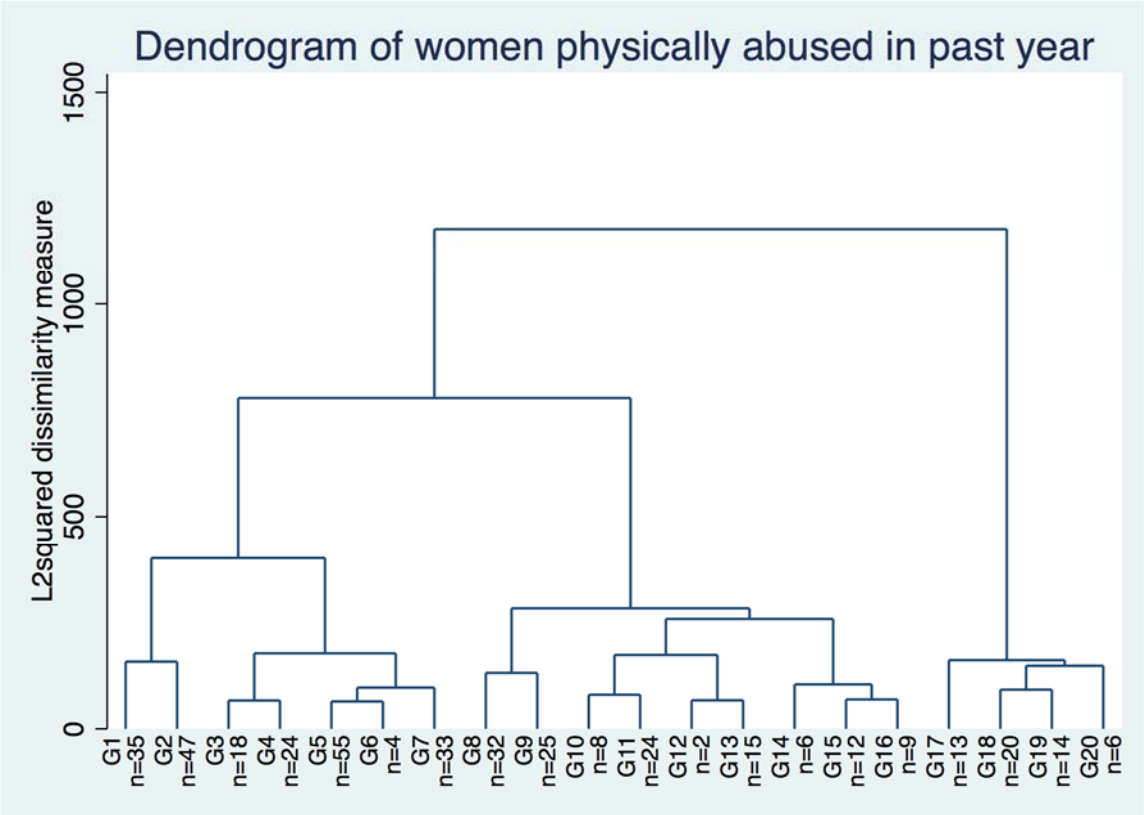
Figure 12: Ward's Hierarchical Cluster Analysis Dendrogram



Chapter 6: Conclusions

A summary of the key findings, limitations, and implications from the three dissertation surveys are presented.

Key Findings

Prevalence and Risk Factors of Intimate Partner Violence (IPV)

In the first study, we estimated the prevalence and associated factors for physical and sexual intimate partner violence (IPV) among married women in rural Bangladesh. 28.8 % of women had ever experienced physical or sexual IPV by their spouse and 13.2 % of women had experienced a form of physical or sexual IPV in the past year. Our hypothesis was supported that the odds of having experienced IPV in the past year were greater among less educated women (AOR = 2.42, 95% CI: 1.86-3.14) and women whose husbands had lesser education (AOR = 1.64, 95% CI: 1.23-2.18). However, our hypothesis that women of less wealth would have higher odds of having experienced IPV in the past year was not supported. Younger women were at greater odds for experiencing IPV in the past year (AOR = 1.50, 95% CI: 1.01-2.25). Surprisingly, women who were not members of an NGO had lower odds of having experienced physical or sexual IPV in the past year (AOR = .73, 95% CI: 0.55-0.96). The prevalence and forms of IPV varied immensely among neighboring Unions (communities) in rural Bangladesh. Of women experiencing sexual or physical IPV in the past year, only 31% indicated they had told someone about their experience. Family and neighbors were the most frequently told persons and the most likely to intervene. In contrast, police, clerics, health workers, and counselors altogether were told about IPV by 1% of women who had

experienced physical or sexual IPV in the past year.

Intimate Partner Violence (IPV) and Depressive Symptoms

In the second study, we sought to determine if there was a relationship between various forms of intimate partner violence (IPV) and depressive symptoms among married women of reproductive age in rural Bangladesh. Our hypotheses were confirmed that physical, sexual and verbal abuses would be each independently associated with being at risk for depressive symptoms and that those who experienced multiple forms or more severe abuses would be more likely to be at risk for depressive symptoms. Using a clinical cutoff of 9/10 for the EPDS-B, as validated by Gausia and colleagues (2007) in Bangladesh, 30.8% (95% CI: 29.4% - 32.3%) of women in our study demonstrated being at risk for depressive symptoms. 34% (n=1,348) of women in our study were exposed to physical or sexual IPV or verbal attacks by their spouse in the past year. This group of women had 2.47 greater odds (AOR 95% CI: 2.11, 2.89) of depressive symptoms than those who indicated no exposure in the past year. Women who experienced physical IPV in the past year were nearly 2 times as likely (AOR 2.01, 95% CI: 1.52, 2.39) to be at risk of depressive symptoms than those who did not. Women who had ever experienced forced sex during their marriage had higher odds of being at risk for depressive symptoms than those who did not (AOR 1.49, 95% CI: 1.14, 1.94). Women called names, sworn at, or had their character attacked by husbands were nearly 3 times more likely to be at risk for depressive symptoms (AOR 2.82, 95% CI: 2.37, 3.36). Prevalence of IPV exposures and being at risk for depressive symptoms varied between communities, indicating community-based tailored interventions are needed.

An Exploration of Intimate Partner Violence (IPV) Typologies in Rural Bangladesh

In our third study, we sought to explore if patterns of communication and controlling behaviors were associated with IPV and if characteristics of violent relationships naturally clustered into heterogeneous groups consistent with Johnson's proposed "intimate terrorism" and "situational couple violence" typology. The odds of a woman experiencing physical IPV in the past year were approximately 5 fold greater for women in marriages with destructive communication, regardless of whether the wife, the husband, or both spouses verbally attacked their partner ($p<0.000$). Our hypothesis was confirmed that couples in which the wife had experienced physical IPV in the past year would use less constructive communication and more destructive communication ($p<0.000$). Our hypothesis that physically abused (within past year) wives in marriages with "controlling" husbands would have higher odds of experiencing more severe or more frequent physical IPV was also confirmed ($p<0.005$). However, there was no association between physically abused women's reported depressive symptoms (EPDS-B) and their husband's controlling behaviors, which did not support our hypothesis. Findings from cluster analysis of selected relationship characteristics indicated heterogeneity among physically violent relationships. A two-clustered solution compatible with that of Johnson's "situational couple violence" and "intimate terrorism" was identified and warrants further research of his typology theory in the context of rural Bangladesh.

Limitations

The three studies included in this dissertation have a number of limitations.

Cross-sectional Design

Due to the cross-sectional design of this study, neither a causal nor temporal ordering of the associations under examination can be inferred. Devries and colleagues (2013) found there to be a bidirectional relationship between domestic violence and depression (Devries et al., 2013). We do not know whether depressive symptoms may have preceded IPV exposures or possibly made women more susceptible to IPV. Cross-sectional studies are limited, but expedient for understanding the local burden, areas in which to begin intervention, and allocation of resources. Longitudinal studies would greatly contribute to understanding risk and protective factors of IPV as well as the cyclical nature of IPV and depression.

Reporting and Recall Bias

Reporting bias is another concern in IPV studies, particularly given that this study found a lower prevalence of IPV than other studies. Very possibly, IPV was underreported due to many factors, such as fear. Women in abusive relationships may choose not to disclose information regarding violence out of fear or other reasons, which can thereby influence results and subsequent interpretations. The risk of recall bias, such as remembering different forms of violence and frequency of violence may have been difficult for women. For instance, a woman might not have remembered whether a violent episode occurred 9 months ago or 13, thus influencing findings for past year prevalence of IPV. Given the sensitivity regarding the topics of IPV and depressive symptoms, perhaps there are past experiences that one has tried to forget.

Validation of Measurements

The EPDS-B was validated for postpartum women in a more urban context with

higher rates of women's literacy than our study. There may be local differences among women that decrease the validity of our measurements. Moreover, the EPDS was originally intended for examination of women during the perinatal period and women in our study varied in obstetric status. Furthermore, findings from the EPDS are not to be equated with the psychiatric diagnosis of depression. A measure for "control" was developed using a suboptimal method and reasons for abuse may not be truly indicative of a controlling behavior.

Context of IPV

Context of and motivation for violence is important for understanding differences between abusive relationships and a mixed-methods approach is optimal to match quantitatively assessed typologies with contextual factors (Messinger, Fry, Rickert, Catallozzi, & Davidson, 2014). Our study does not provide the full context in which IPV occurs. Also, many characteristics of husbands and their perspectives of relationship qualities were not ascertained. Additionally, acts of violence by wives towards their husbands were not assessed. Furthermore, it was not asked if husbands were present or abroad recently, possibly influencing results. Sylhet is known for high rates of migration of males for work and data from the study population (unpublished) suggests that 30% of men work outside of their local community, thus limiting the possibility of recent physical or sexual IPV.

Confounders

It is always possible confounders have clouded the association between IPV and depressive symptoms, such as a poor relationship with a mother-in-law, which we did not assess (Gausia, Fisher, Ali, & Oosthuizen, 2009). Associations observed in the analysis

may be the function of some common confounding variable that was not included in the studies.

Generalizability

While the villages in this study were typical of rural Bangladesh, characteristics varied by Union and generalizability of the results is limited. Also, we only interviewed married women who had at least one child. Research suggests that IPV type and characteristics may differ between married and unmarried women and for women who have children with their abusive partner (Brownridge, 2010). Results drawn from this dissertation may be context specific and further studies are needed to compare and contrast findings with other populations.

Study Implications

IPV Screening

Universal screening for IPV is controversial and effectiveness in reducing IPV is questioned. However, Spangaro (2009) points out that screening for IPV is only as effective as the referred treatments are in reducing violence (Spangaro, Zwi, & Poulos, 2009). Clear and robust referral pathways are needed in collaboration with domestic violence agencies for any intervention to be effective (Trevillion et al., 2012). Though some may argue that screening for IPV without referral to services might be unethical, research suggests that screening can actually have a therapeutic effect; allowing for victimized women to experience empathy and normalizing an isolated woman's difficult experiences and feelings (Spangaro et al., 2009). Regardless of one's stance, such screening is necessary to determine the prevalence of IPV, associated risk and protective

factors within a community, and pave the way for advocacy, resource allocation, direction of future research, and creation of appropriate IPV interventions.

The first study of this dissertation demonstrated victims of physical IPV in rural Bangladesh do not often share IPV experiences. Pursuit of formal avenues for assistance with IPV is virtually non-existent (<1%) and any assistance presently comes from neighbors and family members. Study participants were surveyed in their home by locally recruited and trained female interviewers. Study participants did opt to share IPV experiences with these female interviewers, even though all participants were free to decline answering. When future interventions are designed for IPV victims in rural Bangladesh, it appears feasible that locally trained female interviewers or community health workers could administer home-based screening for women at risk for IPV. Findings from this dissertation indicate probing into communication patterns between wives and their husbands could possibly be an effective way to screen and identify women most at risk for physical IPV and provide appropriate resources or referrals to violence prevention programming. Though a proxy measure was used to determine controlling behaviors of abusive husbands, creation of a validated tool to survey controlling patterns might be helpful in identifying women most at risk for severe and frequent physical IPV.

IPV Prevention Strategies

Research specifying effective IPV prevention strategies in LMIC (low-income and middle-income countries) is sparse, but promising. Ellsberg and colleagues (2014) conducted a recent review of interventions to reduce violence against women in LMICs. Group-based training for women and men via school and community workshops to

promote healthy norms and positive behavioral changes, combined livelihood and training interventions for women, and community mobilization interventions entailing participatory projects and engaging stakeholders were all found to be efficacious in reducing violence against women (Ellsberg et al., 2015). Other interventions, such as building shelters, training police officers, awareness-raising campaigns (billboards, posters, television, radio), and national emergency hotlines did not have sufficient evidence to make a determination of effectiveness. The reviewers concluded that best strategies should entail multi-sectorial programs for engaging multiple stakeholders to change long-held cultural attitudes and violent behaviors. Moreover, interventions should aim to increase skills, including communication and conflict resolution tactics (Ellsberg et al., 2015).

We found great variation in the prevalence of physical and sexual IPV among neighboring communities (Unions), suggesting that community-based interventions and engagement of local stakeholders should be prioritized for future intervention. In light of the differences in communication patterns of violent and nonviolent marriages, our study further supports the idea that interventions to improve communication and conflict resolution skills could be effective in our study population.

A systematic review of structural interventions for IPV in LMICs by Bourey et al (2015) concluded social and/or economic interventions led to positive outcomes (Bourey, Williams, Bernstein, & Stephenson, 2015). Economic interventions were associated with decreases in controlling behaviors by partners, relationship quality improvements, and economic gains. Among women in our study who experienced IPV in the past year, 23% indicated financial crisis, 7% indicated unemployment, and 5% indicated food crisis as a

perceived reason for experiencing violence by their partner. Development of economic interventions in Sylhet, such as micro financing, might prove beneficial in both alleviating poverty and reducing IPV.

IPV and Depression

Our research indicates a strong relationship between IPV and being at risk for depressive symptoms. Paired with other research indicating depression can also be a risk factor for IPV, it would be wise to consider future interventions that address both IPV and depression. In LMICs, CBT (Cognitive Behavioral Therapy) delivered by community health workers, group interpersonal psychotherapy, and medication (fluoxetine) have all been found to be effective in reducing depressive symptoms for women of reproductive age (Patel, Simon, Chowdhary, Kaaya, & Araya, 2009). For postpartum women, effective depression interventions include CBT (Cognitive Behavioral Therapy), interpersonal therapy, medication, social support strengthening, stress management and reduction, dietary improvements, exercise, improved sleep, breastfeeding support, and family planning (Miller & LaRusso, 2011).

The perinatal period and home-based maternal and child interventions, a relatively higher period of contact between women and health resources, could be optimal for screening women at risk for IPV and depressive symptoms and providing women with resources and referrals to future interventions. In Pakistan, local women trained to deliver basic health care interventions (CHWs) were successful in treating postnatal depression through use of an adapted CBT approach (Rahman et al., 2013). A CHW approach can be integrated into existing maternal and child health infrastructure

during antenatal and postnatal visitations with little fear of mental health stigmatization (Patel et al., 2009).

IPV Typology Theory

Clustering analysis indicated heterogeneity of relationship types among women who experienced physical IPV in their marriages. We found a Johnsonian framework of IPV to be compatible with our data and should be further researched in the context of Bangladesh. Application of his theory, if further validated, may be helpful in addressing IPV. Typology research of violent relationships has given way for more effective IPV prevention and treatment efforts, whereby interventions are tailored to better suit the specific type of relationship in which violence occurs (Bazargan-Hejazi et al., 2014; Charles, Whitaker, Le, Swah, & DiClamente, 2011; Johnson & Leone, 2005; Melander, Noel, & Tyler, 2010; Renner & Whitney, 2012). Such research has been useful in explaining IPV within Asian contexts (Emery, Wu, & Tsolmon, 2015; Tiwari et al., 2015). Future research is needed to further validate Johnson's IPV typology in the context of rural Bangladesh, which could aid in the development of specified screening and tailored interventions (Fulu et al., 2013).

In conclusion, the results from this dissertation demonstrate that a large number of women experience IPV in rural Bangladesh. Though the majority of these women's experiences are never heard, their sufferings are no less real. In the words of Judith Herman (1997), "It is very tempting to take the side of the perpetrator. All the perpetrator asks is that the bystander do nothing. He appeals to the universal desire to see, hear, and speak no evil. The victim, on the contrary, asks the bystander to share the burden of pain. The victim demands action, engagement, and remembering."

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Graduate Research Assistant under Drs. Abdullah Baqui and Saifuddin Ahmed for the Healthy Fertility Study (Sylhet, Bangladesh) with The International Center for Maternal and Newborn Health of The Johns Hopkins School of Public Health: January, 2014 – Present [Sylhet Division has the lowest levels of education and highest unemployment in all of Bangladesh. The project site was chosen because of high poverty and man health disparities.]

- Helped conduct a survey among 4,000 women of reproductive age in the Sylhet District of rural Bangladesh as part of a long-term comprehensive study on maternal and child health.
- Performed research and data analysis for three papers under the dissertation topic: "Intimate Partner Violence and Depressive Symptoms Among Married Women of Reproductive Age in Rural Bangladesh"

Graduate Research Assistant under Dr. Britta Mullany for the White Mountain Apache Tribe Fatherhood Initiative "Nalwod" with The Johns Hopkins School of Public Health –The Center for American Indian Health: August 2009 – July 2011
[The White Mountain Apache Tribe consistently has one of the highest suicide rates in the United States, high unemployment and poverty, and social and health challenges endemic to many reservations and minorities across the United States.]

- Conducted formative research and designed a program for the White Mountain Apache Tribe to improve child health through creating support systems for reservation-based fathers, particularly those of children 5 years of age and younger. For this intervention, I (i) performed a literature review of fatherhood interventions, (ii) developed interview guides for in-depth interviews and focus groups, (iii) created a conceptual framework and a root cause analysis, (iv) constructed stringent surveys to measure indicators and other areas of interest, and (v) analyzed qualitative data.

Johnson & Johnson Community Health Care Scholar: May 2010 – May 2013
[J&J/JHU Scholars Program is part of a collaboration established in 1998 between the Johnson & Johnson Community Health Care Program and the Johns Hopkins Bloomberg School of Public Health (JHSPH) to help improve the sustainability of community health care organizations (CHCOs) around the country.]

- Trained Congreso de Latinos Unidos staff how to (i) design and implement their own evaluation plan, (ii) set goals, objectives, and indicators, (iii) create a conceptual framework, (iv) construct surveys, (v) establish a data base using Epi-Info, (vi) conduct data analysis, and (vii) present their program's outcomes.

Native Vision Year-Round Program Administrator with The Johns Hopkins School of Public Health –The Center for American Indian Health –Stationed on the White Mountain Apache Tribe Reservation in Whiteriver, Arizona: June 2007 – August 2009

- Guided (i) formative research for the implementation of child and development programming on the White Mountain Apache Tribe reservation aimed at deterring drug-abuse, suicide and other harmful behaviors while encouraging individual and cultural strengths, (ii) designed and conducted health education, positive development, and leadership programs for reservation-based schools, (iii) planned and implemented quarterly sports and life-skills clinics, (iv) helped organize and run an annual camp for over a 1,000 students from 30 different tribes, and (v) developed public service announcements and multimedia projects promoting health.

Health Worker under Dr. Albino of Nundaco, Mexico: April 2006 –July 2006 [Santa Cruz Nundaco is the central trading village of the Mixtecs in the Santa Cruz district. Nundaco has a population of approximately 700, while its 6 sister villages have populations between 200 and 500 people.]

- Worked in a medical clinic under Dr. Albino, a native Mixtec, to learn how to (i) communicate effectively in oral cultures and implement behavioral interventions among indigenous peoples, (ii) received basic training in treatment of parasitic infections, injuries, and common diseases, and (iii) worked with village authorities on community-development projects (construction, well-digging, medical clinics, English classes).

Global Frontier Missions Intern in Oaxaca (Wah-hah-kuh), Mexico: August 2004 - August 2005 [GFM is a non-profit organization, based in Tlaxiaco (Tlah-hi-ah-koh), the center of the Mixtec region, established to meet the physical and spiritual needs of the indigenous of Oaxaca. The state of Oaxaca contains the highest concentration of indigenous people groups in all of North and South America with over 155 different spoken dialects.]

- Received (i) cultural training in how to work in oral cultures, (ii) trained medical and volunteer teams from around the world how to work in the culturally sensitive region, (iii) led over 20 teams into remote villages, and (iv) helped organize medical clinics and community projects in indigenous villages.

TEACHING EXPERIENCE:

Teaching Assistant at The Johns Hopkins Bloomberg School of Public Health: 2010 - 2012

- Managing Non-Governmental Organizations in the Health Sector: 2010, 2011, 2012
- Introduction to International Health: 2009, 2010, 2011
- Approaches to the Management of Health System Organizations: 2011
- Management of Domestic Health System Organizations: 2011
- Health Systems in Lower and Middle Income Countries: 2011

NOTABLE ACTIVITIES AND VOLUNTEER EXPERIENCE:

- Music Director and Leader of Worship for Christian Connections in International Health Conference (Washington D.C): May 2015
- Coordinator and Emcee for Johns Hopkins Tri-school Event "The Problem of Suffering and the Goodness of God" with world-renowned speakers Drs. Ravi Zacharias and Vince Vitale: November 2014
- Joint leader for Johns Hopkins Public Health Christian Fellowship: 2009 – 2014
- Assistant Leader for Johns Hopkins International Fellowship: 2010 – 2012
- Long-term mentor of numerous young men: 2001 – Present

ADDITIONAL SKILLS:

- Proficient in Spanish and advanced in SEE (Signing Exact English)
- Microsoft Office, STATA, and EpiInfo
- Certified ESL (English as a Second Language) teacher
- Certified CPR and First Aid
- Video editing, music recording/layering, graphic design, and art